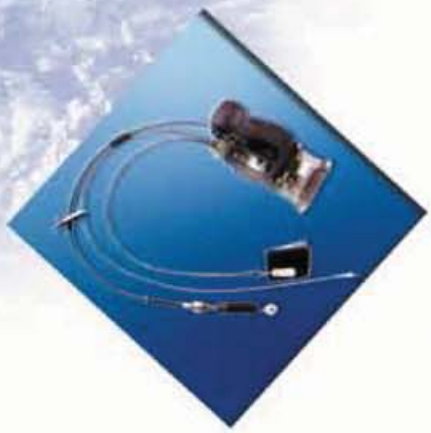


# YOUNG HEUNG

## IRON & STEEL CO., LTD.

麦记五金机械（上海）有限公司
王亮 18221280210

# WELCOME TO OUR COMPANY

YOUNG HEUNG IRON & STEEL CO.,LTD. is among the premier producers in the field of steel wire products, striving always to beat industry standard.
The motto of our company has been HONESTY,ORIGINALITY and SERVICE since established in 1977.

YOUNG HEUNG IRON & STEEL CO.,LTD. has been continually taking pains to reach the highest quality by high-qualified engineers and accumulated technology for our product ; WIRE ROPE, HARD DRAWN STEEL WIRE, GALVANIZED STEEL WIRE & STRANDS, GALVANIZED AIRCRAFT CABLE, INNER CABLE, STEEL BARS FOR PRESTRESSED CONCRETE, LOW RELAXATION STEEL STRANDS FOR PRESTRESSED CONCRETE & COLD DRAWN STEEL BAR.

We believe YOUNG HEUNG IRON & STEEL CO.,LTD. has reached international prominence within the complex steel industry of wire producing companies.

The continuing challenge for the 21st century is our promise to always improve our products and maintain leadership in our products.
We will contribute both the highest quality and the best service to our customers.

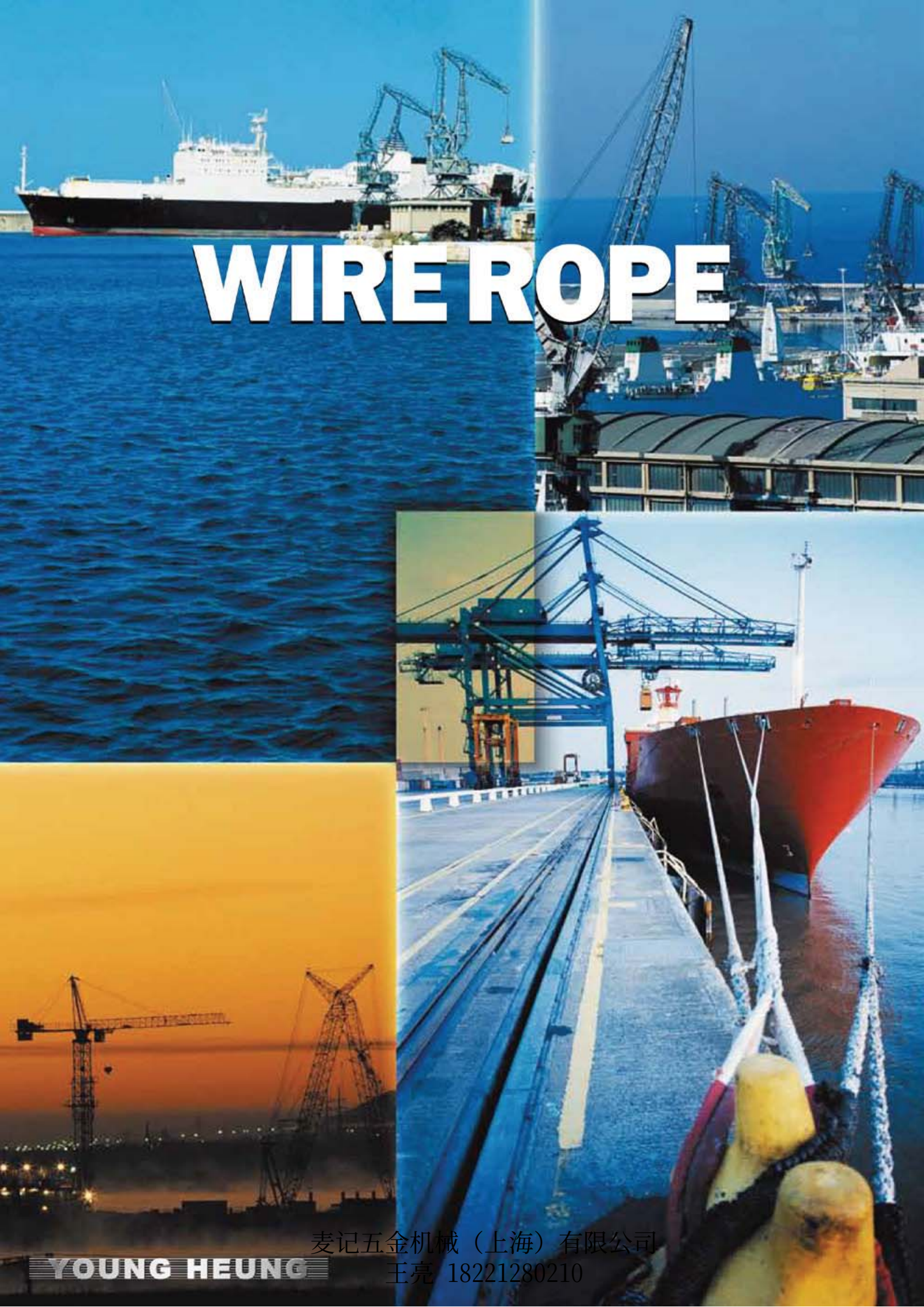
YOU can be assured of our COMPETITIVE PRICING POLICY.
The BEST QUALITY,FAST and TIMELY DELIVERY and EXCELLENT SERVICE.

# BRIEF HISTORY

| | |
|---|---|
| 1977. 20. Apr. | The Company was established |
| 1979. 5. Jun. | Completed 1st expansion plant |
| 1979. 1. Sep. | Approval of Korean Industrial Standard (Wire Rope & Hard drawn Steel Wire) |
| 1983. 27. Dec. | Approval of Korean Industrial Standard (Galv. Steel Wire Strands) |
| 1987. 15. Oct. | Paid in Capital was increased to 5Billion won |
| 1989. 5. Jul. | Approval Japanese Industrial Standard(Wire Rope) |
| 1994. 8. Sep. | Approval of ISO 9001(LRQA) |
| 1996. 16. Nov. | Approval of Korean Industrial Standard (Steel Bars for Prestressed Concrete & Low Relaxation Steel Strands for Prestressed Concrete) |
| 2001. 13. Aug. | Approval of Japanese Industrial Standard(PC Strands) |
| 2004. 28. Apr. | Approval of Japanese Industrial Standard (Galv. Steel Wire Strands & Hard drawn Steel Wire) |
| 2004. 22. Dec. | Merged in the KISCO Group (KOREA IRON & STEEL CO.,LTD.) |
| 2008. 07. Mar. | Approval of API 9A Quality System (API) |

# Highest quality, highest service

## CONTENTS



# WIRE ROPE

## THE TECHNICAL SPECIALITY OF YOUNG HEUNG

### A. THE MOST IMPROVED FACILITY FOR PATENTING

Young Heung' s patenting process has an in-line facility, which consistently sets Heat-treatment and Pickling. This in-line process creates the maximum Heat-treatment proficiency and perfectly manufactured products.

### B. OUR NEW MODERNIZED ZINC COATING PROCESS

Young Heung uses a ceramic galvanizing furnace resulting in high quality galvanized finished wire products.

### C. "SUPER POWER"ROPE

Young Heung' s new modernized facility can answer all our customers' requests for high quality wire ropes.

### D. SPECIAL WIRE DEVELOPMENT

Young Heung' s technical superiority permits us to produce special wire ropes such as high grade mining, compact, swaged and elevator wire ropes in addition to our highly reputed General Purpose Wire Ropes.

### E. SPECIALITY OF PRODUCTION PROCESS

Young Heung continues in our effort to improve our production manufacturing process, including pre-forming, post-forming, pretension etc.

## 1. Construction of wire rope

The design of a rope is determined by

**STRAND CONSTRUCTION**
The number and arrangement of wires in each strand

**ROPE CONSTRUCTION**
The number and arrangement of strands in each rope

**THE CORE**


## 2. Grades of rope wire

Young Heung wire ropes are made of steel wires classified into following tensile strength grades to meet various requirements according to the applications.

| | | |
|---|---|---|
| Grade 135 | $kg/mm^2$ | : Special grade to meet requirement of hoisting ropes on traction elevators |
| Grade 150/160 | $kg/mm^2$ | : Galvanized wires coated with zinc through hot dip process for protection against corrosion |
| Grade 165 | $kg/mm^2$ | : Ungalvanized and drawn galvanized wires for general purpose wire ropes. |
| Grade 180 | $kg/mm^2$ | : Ungalvanized high tensile grade wires for general purpose wire ropes. |
| Grade 195 | $kg/mm^2$ | : Extra high tensile grade is used in the manufacture of wire rope where ultimate breaking strength is required. |

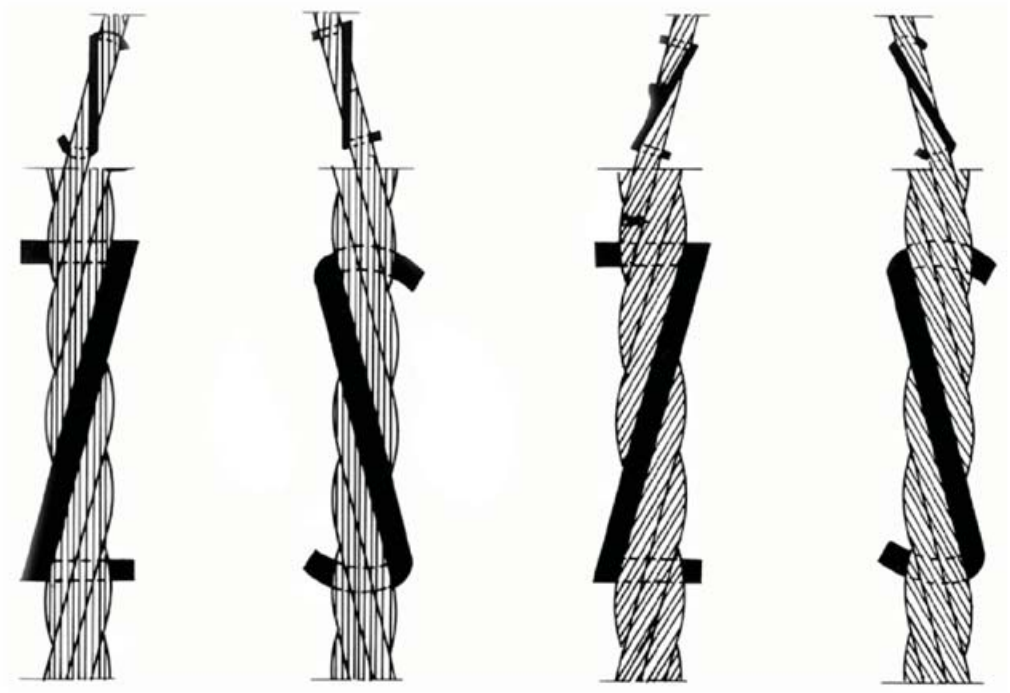
## 3. Wire rope lay

Right lay : Clockwise

Left lay : Counter-clockwise

Regular lay : Wires in strands are laid in the opposite direction of the strands and are parallel to the rope axis.
Ropes with regular lay are easy to handle and have greater resistance to crushing than those with lang lay.

Lang lay : Wires are laid in the same direction as the strands of the rope, and in an angle to the rope axis.
Longer lengths of the individual wires are exposed, creating greater resistance to wear and improved flexibility.
Lang lay ropes should only be used where both rope ends are "fixed"and therefore, should not be used with a swivel type terminal.



right hand regular lay | left hand regular lay | right hand lang's lay | left hand lang's lay

## 4. Cores for wire ropes

**Steel**

IWRC(Independent Wire Rope Core)
The main core is an independent wire rope, normally having the construction 7X7, 7X17(S)
IWSC(Independent Wire Strand Core)
The main core is an independent wire strand, normally having the same construction as the outer strands of the rope.

**Fibre**

Fibre cores are stranded and comprised either :
Natural fibres such as sisal, hemp, jute, and cotton.
Synthetic fibres such as polyimide, polyethylene, and polypropylene.

## 5. Preformed ropes

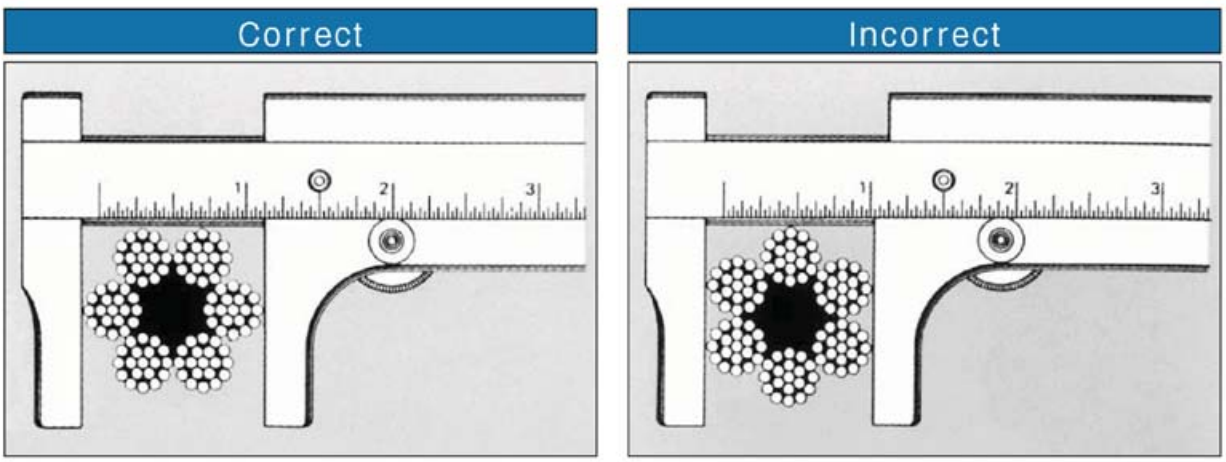
In the preforming process the wires and strands are given their final helical pitch before being laid up into rope. Ropes made in this way show no tendency to untwist when cut.

## 6. Lubrication

Lubrication reduces internal friction of the wires and strands and protects against corrosion. Grease is applied to all ropes.
If special lubricants are required this must be specifically stated at time of ordering.

## 7. Diameter of wire ropes

The diameter of a wire rope is the diameter of the circle which encloses all of the wires.
When measuring wire rope it is important to take the greatest distance of the outer limits of the 'Crowns' of two opposite strands. A measurement across the valleys will result in incorrect lower readings.



## 8. SHEAVE AND DRUM

When a rope is bent around the sheave or drum, individual wires in the strand are subjected to bending stress and repeated bending fatigue. To obtain a smooth operation and longer life for the wire rope line, it is necessary to keep the diameter of sheave and drum above the recommendable figures of the Table and to keep the surface of the grooves sharp and smooth.

**Minimum Diameter of Sheave and Drum (D=Wire Rope Dia.)**

| Construction | Min. Dia. | Recommendable Dia. |
|---|---|---|
| 6 x 7 | 45 x D | 70 x D |
| 6 x 19 | 30 x D | 45 x D |
| 6 x 37 | 20 x D | 30 x D |
| 6 x S(19) | 33 x D | 50 x D |
| 6 x Fi(25) | 26 x D | 39 x D |
| 6 x Fi(29) | 24 x D | 35 x D |
| 8 x S(19) | 27 x D | 40 x D |
| 18 x 7 | 35 x D | 50 x D |

## 9. SAFETY FACTOR OF WIRE ROPE

It is difficult to fix the safety factor for each type of wire rope to be used for various equipment, as this factor depends not only on the load carried, but also on the speed of rope working, the kinds of fitting used for rope ends, the acceleration and deacceleration, length of rope, the number, size and arrangements of sheave and drums etc. The following safety factors are minimum requirements for safety and economy in the common installation.

**Safety Factor of Wire Rope**

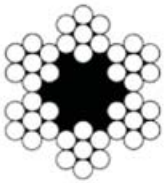
| Purpose | Min.S.F. |
|---|---|
| Elevator | 10 |
| Crane, Hoist<br>Derrick, Sling | 6 |
| Guy or Stay,<br>Horizontal Pull or<br>Traction | 4 |
| Main Wire of<br>Aerial Rope Way | 3 |

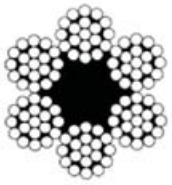
## 10. MUST AVOID FOR LONGER LIFE OF ROPE

Twist, Loop or Kink of wire rope.
Moisture, Dust and Acid or Sulphuric Hume gas.
Overload.
Crushing or hammering.
Severe or reverse bending(S-Bending).
Too small Sheaves, Drums and Guide Rollers.
Hard rolling or Sheaves and Rollers.
Worn Groove, Broken or Soft Sheaves and Rollers.
Poor or No Lubrication.
Heat Influence.
Wrong Fitting and Spooling on the Drum.
Excessive Fleet Angle.
Vibration.
Obstacles, Sand and Grit on the surface of operation line.
Shock-Too fast start or Stop.

# TYPICAL ROPE CONSTRUCTIONS

## Point Contact Lay Rope


6 x 7FC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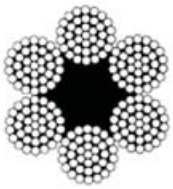
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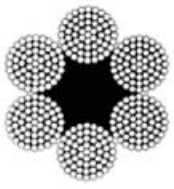
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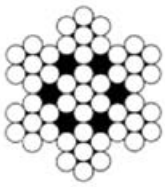
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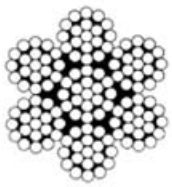
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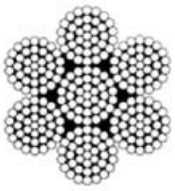
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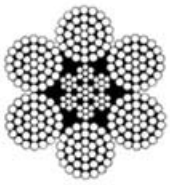
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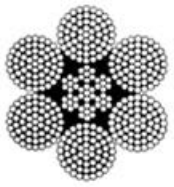
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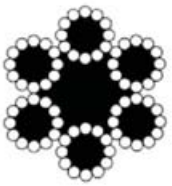
## Marine Rope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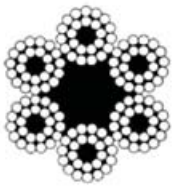
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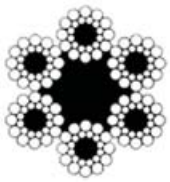
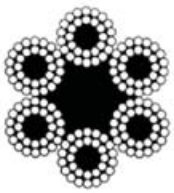

6 x S(24)FC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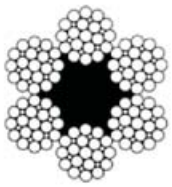
## Elevator Rope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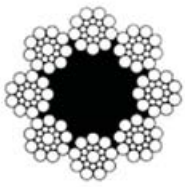
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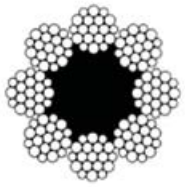
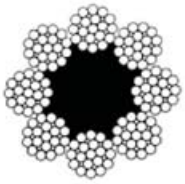

8 x W(19)FC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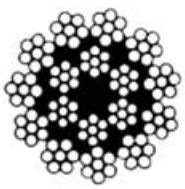
## Non-Rotating Rope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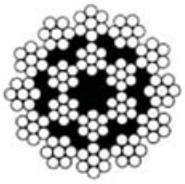
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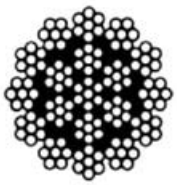
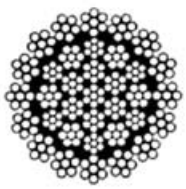

19 x 7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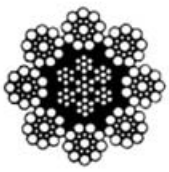
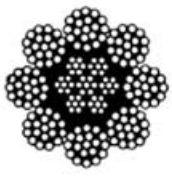

8 x S(19)IWRC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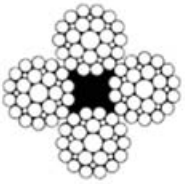
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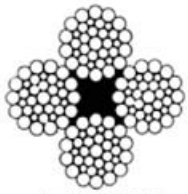
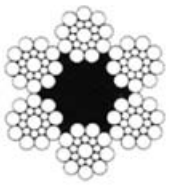

4 x WS(36)FC


19 x 19(S)

# TYPICAL ROPE CONSTRUCTIONS

## Linear Contact Lay Rope 6 x19 Class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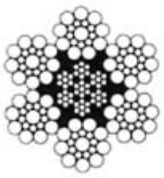
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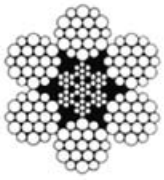
6xW(19)FC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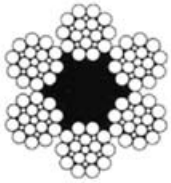
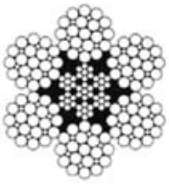

6xFi(21)FC


6xFi(25)FC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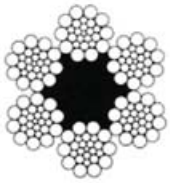
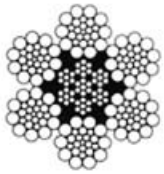
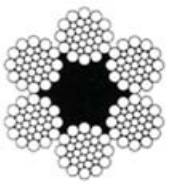

6xWS(26)FC

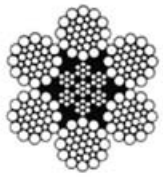

6xWS(26)IWRC

## Linear Contact Lay Rope 6 x37 Class

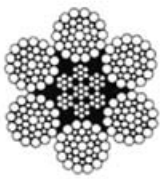

6 x Fi(29)FC


6 x Fi(29)IWRC


6 x WS(31)FC


6 x WS(31)IWRC


6 x WS(36)FC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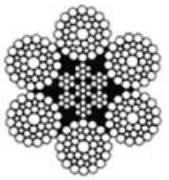
6 x WS(41)FC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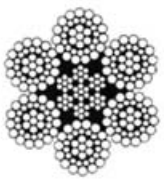
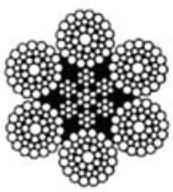
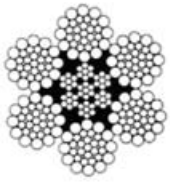
6 x SeS(37)FC

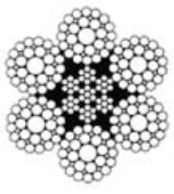

6 x SeS(37)IWRC


6 x FiS(49)FC

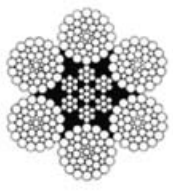

6 x FiS(49)IWRC


6 x FiS(37)IWRC

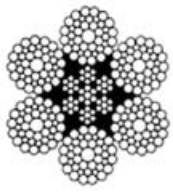

6 x WS(37)FC


6 x Fi(33)IWRC


6 x SWS(49)FC

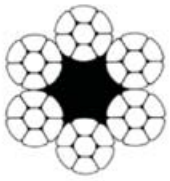

6 x SWS(49)IWRC

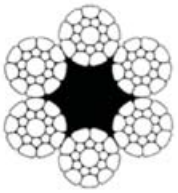

6 x SFi(36)FC

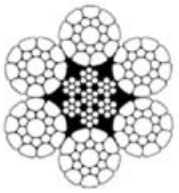

6 x SFi(41)IWRC

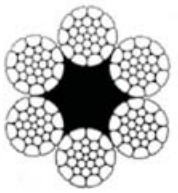
# TYPICAL ROPE CONSTRUCTIONS

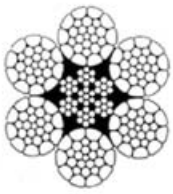
## Compact Wire Rope

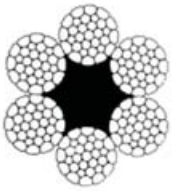

6 x 7FC

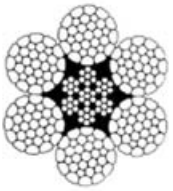

6 x S(19)FC

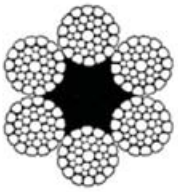

6 x S(19)IWRC

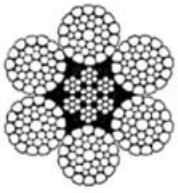

6 x WS(26)FC

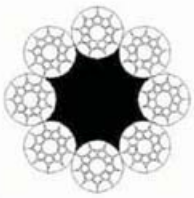

6 x WS(26)IWRC

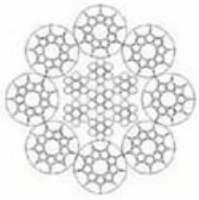

6 x WS(31)FC

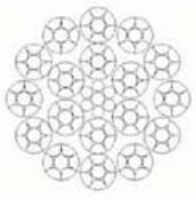

6 x WS(31)IWRC

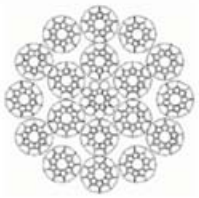

6 x WS(36)FC

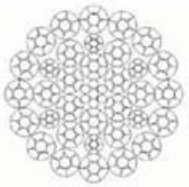

6 x WS(36)IWRC


8 x 19(S)C FC

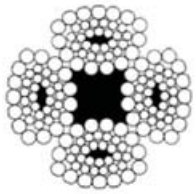

8 x 19(S)C IWRC

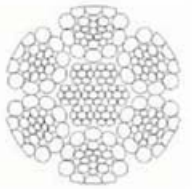

19 x 7C

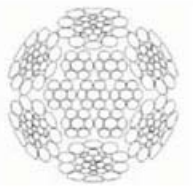

19 x 19(S)C

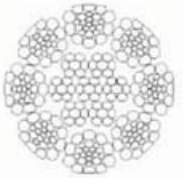

35 x 7C

## Swaged Wire Rope

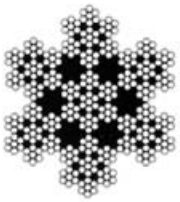

4 x 39(SES) FC

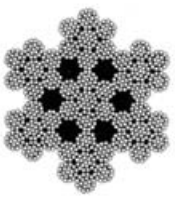

6 x 26(WS)S IWRC


6 x 26(WS)SS IWRC

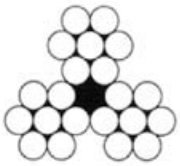

8 x 26(WS)S IWRC

## Cable Laid Rope


7 x 7 x 7

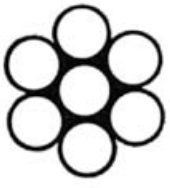

7 x 7 x 19

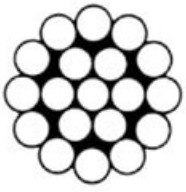
## Guard Rope

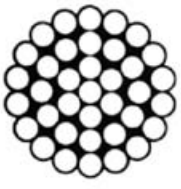

3 x 7

## Galvanized Steel Strand

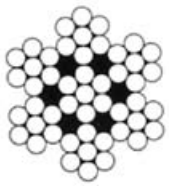
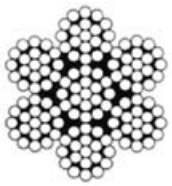
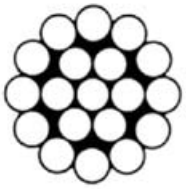
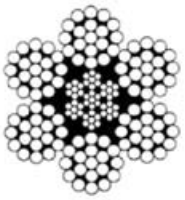
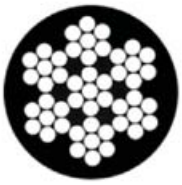
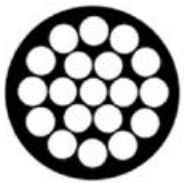
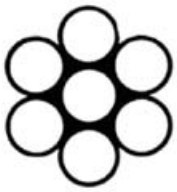
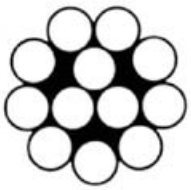
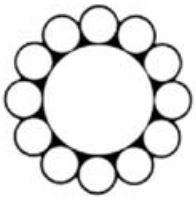
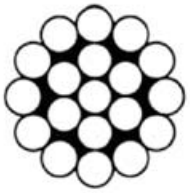
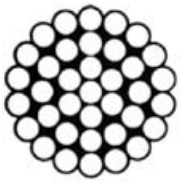
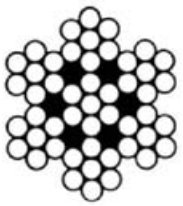
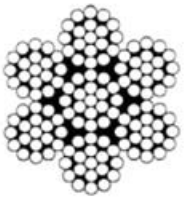
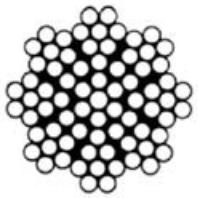

1 x 3


1 x 7


1 x 19


1 x 37

# TYPICAL ROPE CONSTRUCTIONS

| | | | | |
|---|---|---|---|---|
| **Galvanized Aircraft Cable** |  7 x 7 |  7 x 19 |  1 x 19 |  6 x 19IWRC |
| **P.V.C Coated Cable** |  PVC COATED 7 x 7 |  PVC COATED 7 x 19 |  PVC COATED 1 x 19 |  PVC COATED 6 x 19IWRC |
| **Inner Cable** |  1 x 3 |  1 x 7 |  1 x 12 |  1 x 13 |
| |  1 x 19 |  1 x 37 |  7 x 7 |  7 x 19 |  8 x 7+(1 x 19) |

## "Authorized by"

| | |
|---|---|
| **KS** | (Ministry of Trade & Industry, Republic of Korea) |
| **JIS** | (Ministry or Trade & Industry, Japan) |
| **K.R.** | (Korean Register of Shipping) |
| **A.B.S.** | (American Bureau of Shipping) |
| **LLOYD'S** | (Lloyd's Register of Shipping) |
| **G.L.** | (Germanischer Lloyd) |
| **N.K.** | (Nippon Kaiji Kyokai) |
| **B.V.** | (Bureau Veritas) |
| **D.N.V** | (Det Norske Veritas) |
| **R.I.N.A** | (Registro Italiano Navale) |
| **ISO 9001** | (Lloyd's Register Quality Assurance) |
| **ISO 14001** | (Lloyd's Register Quality Assurance) |
| **ISO/TS 16949** | (Lloyd's Register Quality Assurance) |
| **API 9A** | (American Petroleum Institute) |

# FEDERAL SPECIFICATION(RR-W-410)

## 6x7 BRIGHT WIRE ROPE

6x7 +Fiber Core

| Rope Dia. (in.) | Approx. Weight/ft. (Lb) | Nominal Breaking Load (Lb) Improved Plow Steel |
|---|---|---|
| 1/4 | 0.094 | 5,280 |
| 5/16 | 0.15 | 8,200 |
| 3/8 | 0.21 | 11,720 |
| 7/16 | 0.29 | 15,860 |
| 1/2 | 0.38 | 20,600 |
| 9/16 | 0.48 | 26,000 |
| 5/8 | 0.59 | 31,800 |
| 3/4 | 0.84 | 45,400 |
| 7/8 | 1.15 | 61,400 |
| 1 | 1.50 | 79,400 |
| 1 1/8 | 1.90 | 99,600 |
| 1 1/4 | 2.34 | 122,000 |
| 1 3/8 | 2.84 | 146,200 |
| 1 1/2 | 3.38 | 172,400 |

Galvanizing : Strength shall be deducted by 10% from Bright(Uncoated)Wire Ropes.

## 6x24 GALVANIZED MARINE CABLES

6x24 +7Fiber Core

| Rope Dia. (in.) | Approx. Weight/ft. (Lb) | Nominal Breaking Load (Lb) Improved Plow Steel |
|---|---|---|
| 3/8 | 0.194 | 9,540 |
| 1/2 | 0.35 | 16,800 |
| 5/8 | 0.54 | 26,000 |
| 3/4 | 0.78 | 37,200 |
| 13/16 | 0.91 | 43,600 |
| 7/8 | 1.06 | 50,400 |
| 1 | 1.38 | 65,600 |
| 1 1/16 | 1.56 | 73,800 |
| 1 1/8 | 1.75 | 82,400 |
| 1 3/16 | 1.95 | 91,800 |
| 1 1/4 | 2.16 | 101,400 |
| 1 3/8 | 2.61 | 122,000 |
| 1 7/16 | 2.85 | 133,000 |
| 1 1/2 | 3.11 | 144,600 |
| 1 5/8 | 3.64 | 169,000 |
| 1 11/16 | 3.93 | 181,800 |
| 1 3/4 | 4.23 | 195,000 |
| 1 13/16 | 4.53 | 208,000 |
| 1 15/16 | 5.18 | 238,000 |
| 2 | 5.52 | 252,000 |
| 2 1/16 | 5.87 | 268,000 |

# FEDERAL SPECIFICATION(RR-W-410)

## 6 x 19 & 6 x 37 CLASSIFICATION WIRE ROPE
## (SINGLE OPERATION, Bright or Drawn-Galvanized)

6 x 19-26 & 6 x 27-49+Fiber Core or I.W.R.C.

| Rope Dia. (in.) | Approx. Weight/ft. (Lb) | | Nominal Breaking Load (Lb) | | |
|---|---|---|---|---|---|
| | | | Improved Plow Steel | | Extra I.P.S. |
| | F.C. | I.W.R.C. | F.C. | I.W.R.C. | I.W.R.C. |
| 1/4 | 0.105 | 0.116 | 5,480 | 5,880 | 6,800 |
| 5/16 | 0.164 | 0.18 | 8,520 | 9,160 | 10,540 |
| 3/8 | 0.236 | 0.26 | 12,200 | 13,120 | 15,100 |
| 7/16 | 0.32 | 0.35 | 16,540 | 17,780 | 20,400 |
| 1/2 | 0.42 | 0.46 | 21,400 | 23,000 | 26,600 |
| 9/16 | 0.53 | 0.59 | 27,000 | 29,000 | 33,600 |
| 5/8 | 0.66 | 0.72 | 33,400 | 35,800 | 41,200 |
| 3/4 | 0.95 | 1.04 | 47,600 | 51,200 | 58,800 |
| 7/8 | 1.29 | 1.42 | 64,400 | 69,200 | 79,600 |
| 1 | 1.68 | 1.85 | 83,600 | 89,800 | 103,400 |
| 1 1/8 | 2.13 | 2.34 | 105,200 | 113,000 | 130,000 |
| 1 1/4 | 2.63 | 2.89 | 129,200 | 138,800 | 159,800 |
| 1 3/8 | 3.18 | 3.50 | 155,400 | 167,000 | 192,000 |
| 1 1/2 | 3.78 | 4.16 | 184,000 | 197,800 | 228,000 |
| 1 5/8 | 4.44 | 4.88 | 214,000 | 230,000 | 264,000 |
| 1 3/4 | 5.15 | 5.67 | 248,000 | 266,000 | 306,000 |
| 1 7/8 | 5.91 | 6.50 | 282,000 | 304,000 | 348,000 |
| 2 | 6.72 | 7.39 | 320,000 | 344,000 | 396,000 |
| 2 1/8 | 7.59 | 8.35 | 358,000 | 384,000 | 442,000 |
| 2 1/4 | 8.51 | 9.36 | 400,000 | 430,000 | 494,000 |
| 2 1/2 | 10.5 | 11.6 | 488,000 | 524,000 | 604,000 |
| 2 3/4 | 12.7 | 14.0 | 584,000 | 628,000 | 722,000 |
| 3 | 15.1 | 16.6 | 685,000 | 740,000 | 850,000 |

Galvanizing : Strength shall be deducted by 10% from Bright(Uncoated)Wire Ropes.

# FEDERAL SPECIFICATION(RR-W-410)

## 6 x 37 CLASSIFICATION WIRE ROPE
## (MULTIPLE OPERATION, Bright or Drawn-galvanized)

6 x 27-49+Fiber Core or I.W.R.C.

| Rope Dia. (in.) | Approx. Weight/ft. (Lb) | | Nominal Breaking Load (Lb) | | |
|---|---|---|---|---|---|
| | | | Improved Plow Steel | | Extra I.P.S. |
| | F.C. | I.W.R.C. | F.C. | I.W.R.C. | I.W.R.C. |
| 1/4 | 0.105 | 0.116 | 5,180 | 5,560 | 6,400 |
| 5/16 | 0.164 | 0.18 | 8,060 | 8,660 | 9,960 |
| 3/8 | 0.236 | 0.26 | 11,540 | 12,400 | 14,280 |
| 7/16 | 0.32 | 0.35 | 15,640 | 16,820 | 19,340 |
| 1/2 | 0.42 | 0.46 | 20,400 | 22,000 | 25,200 |
| 9/16 | 0.53 | 0.59 | 25,800 | 27,800 | 31,800 |
| 5/8 | 0.66 | 0.72 | 31,600 | 34,000 | 39,200 |
| 3/4 | 0.95 | 1.04 | 45,200 | 48,600 | 55,800 |
| 7/8 | 1.29 | 1.42 | 61,200 | 65,800 | 75,600 |
| 1 | 1.68 | 1.85 | 79,600 | 85,600 | 98,200 |
| 1 1/8 | 2.13 | 2.34 | 100,200 | 107,800 | 123,800 |
| 1 1/4 | 2.63 | 2.89 | 123,000 | 132,200 | 152,200 |
| 1 3/8 | 3.18 | 3.50 | 148,200 | 159,400 | 183,400 |
| 1 1/2 | 3.78 | 4.16 | 175,800 | 189,000 | 216,000 |
| 1 5/8 | 4.44 | 4.88 | 206,000 | 222,000 | 254,000 |
| 1 3/4 | 5.15 | 5.67 | 238,000 | 256,000 | 292,000 |
| 1 7/8 | 5.91 | 6.50 | 272,000 | 292,000 | 336,000 |
| 2 | 6.72 | 7.39 | 308,000 | 330,000 | 380,000 |
| 2 1/8 | 7.59 | 8.35 | 346,000 | 372,000 | 428,000 |
| 2 1/4 | 8.51 | 9.36 | 386,000 | 414,000 | 478,000 |
| 2 1/2 | 10.5 | 11.6 | 472,000 | 508,000 | 584,000 |
| 2 3/4 | 12.7 | 14.0 | 568,000 | 610,000 | 700,000 |
| 3 | 15.1 | 16.6 | 670,000 | 720,000 | 828,000 |
| 3 1/4 | 17.7 | 19.5 | 780,000 | 838,000 | 966,000 |
| 3 1/2 | 20.6 | 22.7 | 898,000 | 966,000 | 1,110,000 |

Galvanizing : Strength all be deducted by 10% from Bright(Uncoated)Wire Ropes.

# FEDERAL SPECIFICATION(RR-W-410)

## 8 x 19 CLASSIFICATION ROTATION RESISTANT, WIRE ROPE

8 x 19-36+ Fiber Core or IWRC

| Rope Dia. (in.) | Approx. Weight/ft. (Lb) | | Nominal Breaking Load (Lb) | | |
|---|---|---|---|---|---|
| | | | Improved Plow Steel | | Extra I.P.S. |
| | F.C. | I.W.R.C. | F.C. | I.W.R.C. | I.W.R.C. |
| 1/4 | 0.098 | 0.12 | 4,700 | 5,160 | 5,940 |
| 5/16 | 0.15 | 0.18 | 7,300 | 8,020 | 9,240 |
| 3/8 | 0.22 | 0.26 | 10,480 | 11,520 | 13,260 |
| 7/16 | 0.30 | 0.36 | 14,180 | 15,600 | 17,940 |
| 1/2 | 0.39 | 0.47 | 18,460 | 20,200 | 23,200 |
| 9/16 | 0.50 | 0.60 | 23,200 | 25,600 | 29,400 |
| 5/8 | 0.61 | 0.73 | 28,600 | 31,400 | 36,200 |
| 3/4 | 0.88 | 1.06 | 41,000 | 45,000 | 51,800 |
| 7/8 | 1.20 | 1.44 | 55,400 | 61,000 | 70,000 |
| 1 | 1.57 | 1.88 | 72,000 | 79,200 | 91,000 |
| 1 1/8 | 1.99 | 2.39 | 90,600 | 99,600 | 114,600 |
| 1 1/4 | 2.45 | 2.94 | 111,400 | 122,600 | 141,000 |
| 1 3/8 | 2.97 | 3.56 | 134,200 | 147,600 | 169,800 |
| 1 1/2 | 3.53 | 4.24 | 158,800 | 174,600 | 200,000 |

Galvanizing : Strength shall be deducted by 10% from Bright(Uncoated)Wire Ropes.

## 18 x 7 CLASSIFICATION ROTATION RESISTANT, WIRE ROPE

18 x 7 +Fiber Core & Wire Strand Core(19 x 7)

| Rope Dia. (in.) | Approx. Weight/ft. (Lb) | | Nominal Breaking Load (Lb) | |
|---|---|---|---|---|
| | Fiber Core | Wire Strand Core | Improved Plow Steel | Extra I.P.S. |
| 3/8 | 0.24 | 0.25 | 11,180 | 12,300 |
| 7/16 | 0.33 | 0.35 | 15,160 | 16,660 |
| 1/2 | 0.43 | 0.45 | 19,700 | 21,600 |
| 9/16 | 0.55 | 0.58 | 24,800 | 27,200 |
| 5/8 | 0.68 | 0.71 | 30,600 | 33,600 |
| 3/4 | 0.97 | 1.02 | 43,600 | 48,000 |
| 7/8 | 1.32 | 1.39 | 59,000 | 65,000 |
| 1 | 1.73 | 1.82 | 76,600 | 84,400 |
| 1 1/8 | 2.19 | 2.30 | 96,400 | 106,200 |
| 1 1/4 | 2.70 | 2.84 | 118,400 | 130,200 |
| 1 3/8 | 3.27 | 3.43 | 142,600 | 156,800 |
| 1 1/2 | 3.89 | 4.08 | 168,800 | 185,600 |
| 1 5/8 | 4.57 | 4.80 | 196,800 | 216,000 |
| 1 3/4 | 5.30 | 5.57 | 228,000 | 250,000 |

Galvanizing : Strength shall be deducted by 10% from Bright(Uncoated)Wire Ropes.

# A · P · I SPECIFICATION

## 6 x 7 CLASSIFICATION WIRE ROPE, BRIGHT (UNCOATED)OR DRAWN-GALVANIZED WIRE & GALVANIZED, FIBER CORE

| Rope Dia. (in.) | Approx. Weight Per ft (Lb) | Nominal Breaking Load (Lb) | | | |
|---|---|---|---|---|---|
| | | Plow Steel | | Improved Plow Steel | |
| | | Bright or Drawn Galv'd | Galv'd | Bright or Drawn Galv'd | Galv'd |
| 3/8 | 0.12 | 10,200 | 9,180 | 11,720 | 10,540 |
| 7/16 | 0.29 | 13,800 | 12,420 | 15,860 | 14,280 |
| 1/2 | 0.38 | 17,920 | 16,120 | 20,600 | 18,540 |
| 9/16 | 0.48 | 22,600 | 20,400 | 26,000 | 23,400 |
| 5/8 | 0.59 | 27,800 | 25,000 | 31,800 | 28,600 |
| 3/4 | 0.84 | 39,600 | 35,600 | 45,400 | 40,800 |
| 7/8 | 1.15 | 53,400 | 48,000 | 61,400 | 55,200 |
| 1 | 1.50 | 69,000 | 62,000 | 79,400 | 71,400 |

## 19 x 7 CONSTRUCTION WIRE ROPE, BRIGHT(UNCOATED)OR DRAWN-GALVANIZED WIRE, WIRE STRAND CORE

| Rope Dia. (in.) | Approx. Weight Per ft (Lb) | Nominal Breaking Load (Lb) | |
|---|---|---|---|
| | | Improved Plow Steel | Extra I.P.S |
| 1/2 | 0.45 | 19,700 | 21,600 |
| 9/16 | 0.58 | 24,800 | 27,200 |
| 5/8 | 0.71 | 30,600 | 33,600 |
| 3/4 | 1.02 | 43,600 | 48,000 |
| 7/8 | 1.39 | 59,000 | 65,000 |
| 1 | 1.82 | 76,600 | 84,400 |
| 1 1/8 | 2.30 | 96,400 | 106,200 |
| 1 1/4 | 2.84 | 118,400 | 130,200 |
| 1 3/8 | 3.43 | 142,600 | 156,800 |
| 1 1/2 | 4.08 | 168,800 | 185,600 |

## 6 x 19 & 6 x 37 CLASSIFICATION WIRE ROPE, BRIGHT (UNCOATED)OR DRAWN-GALVANIZED WIRE

| Rope Dia. (in.) | Approx. Weight Per ft (Lb) | | Nominal Breaking Load (Lb) | | | |
|---|---|---|---|---|---|---|
| | | | Plow Steel | Improved Plow Steel | | Extra I.P.S |
| | F.C. | I.W.R.C. | F.C. | F.C. | I.W.R.C. | I.W.R.C. |
| 1/2 | 0.42 | 0.46 | 18,700 | 21,400 | 23,000 | 26,600 |
| 9/16 | 0.53 | 0.59 | 23,600 | 27,000 | 29,000 | 33,600 |
| 5/8 | 0.66 | 0.72 | 29,000 | 33,400 | 35,800 | 41,200 |
| 3/4 | 0.95 | 1.04 | 41,400 | 47,600 | 51,200 | 58,800 |
| 7/8 | 1.29 | 1.42 | 56,000 | 64,400 | 69,200 | 79,600 |
| 1 | 1.68 | 1.85 | 72,800 | 83,600 | 89,800 | 103,400 |
| 1 1/8 | 2.13 | 2.34 | 91,400 | 105,200 | 113,000 | 130,000 |
| 1 1/4 | 2.63 | 2.89 | 112,400 | 129,200 | 138,800 | 159,800 |
| 1 3/8 | 3.18 | 3.50 | | 155,400 | 167,000 | 192,000 |
| 1 1/2 | 3.78 | 4.16 | | 184,000 | 197,800 | 228,000 |
| 1 5/8 | 4.44 | 4.88 | | 214,000 | 230,000 | 264,000 |
| 1 3/4 | 5.15 | 5.67 | | 248,000 | 266,000 | 306,000 |
| 1 7/8 | 5.91 | 6.50 | | 282,000 | 304,000 | 348,000 |
| 2 | 6.72 | 7.39 | | 320,000 | 344,000 | 396,000 |
| 2 1/8 | | 8.35 | | | 384,000 | 442,000 |
| 2 1/4 | | 9.36 | | | 430,000 | 494,000 |
| 2 3/8 | | 10.4 | | | 478,000 | 548,000 |
| 2 1/2 | | 11.6 | | | 524,000 | 604,000 |
| 2 5/8 | | 12.8 | | | 576,000 | 658,000 |
| 2 3/4 | | 14.0 | | | 628,000 | 736,000 |
| 2 7/8 | | 15.3 | | | 682,000 | 796,000 |
| 3 | | 16.6 | | | 740,000 | 856,000 |

## 6 x 19 & 6 x 37 CLASSIFICATION WIRE ROPE, GALVANIZED WIRE

| Rope Dia. (in.) | Approx. Weight Per ft (Lb) | | Nominal Breaking Load (Lb) | | | |
|---|---|---|---|---|---|---|
| | | | Plow Steel | Improved Plow Steel | | Extra I.P.S |
| | F.C. | I.W.R.C. | F.C. | F.C. | I.W.R.C. | I.W.R.C. |
| 1/2 | 0.42 | 0.46 | 16,820 | 19,600 | 20,600 | 23,940 |
| 9/16 | 0.53 | 0.59 | 21,200 | 24,200 | 26,000 | 30,240 |
| 5/8 | 0.66 | 0.72 | 26,000 | 30,000 | 32,200 | 37,080 |
| 3/4 | 0.95 | 1.04 | 37,200 | 42,800 | 46,000 | 52,920 |
| 7/8 | 1.29 | 1.42 | 50,400 | 58,000 | 62,200 | 71,640 |
| 1 | 1.68 | 1.85 | 65,600 | 75,200 | 80,800 | 93,060 |
| 11/8 | 2.13 | 2.34 | 82,200 | 94,600 | 101,600 | 117,000 |
| 11/4 | 2.63 | 2.89 | 101,200 | 116,200 | 125,000 | 143,800 |
| 13/8 | 3.18 | 3.50 | | 139,800 | 150,200 | 172,800 |
| 11/2 | 3.78 | 4.16 | | 165,600 | 178,000 | 205,200 |
| 15/8 | 4.44 | 4.88 | | 192,600 | 207,000 | 237,600 |
| 13/4 | 5.15 | 5.67 | | 223,200 | 239,400 | 275,400 |
| 17/8 | 5.91 | 6.50 | | 253,800 | 273,600 | 313,200 |
| 2 | 6.72 | 7.39 | | 288,000 | 309,600 | 356,400 |
| 21/8 | | 8.35 | | | 345,600 | 397,800 |
| 21/4 | | 9.36 | | | 387,000 | 444,600 |
| 23/8 | | 10.4 | | | 430,200 | 493,200 |
| 21/2 | | 11.6 | | | 471,600 | 543,600 |
| 25/8 | | 12.8 | | | 518,400 | 592,200 |
| 23/4 | | 14.0 | | | 565,200 | 662,400 |
| 27/8 | | 15.3 | | | 613,800 | 716,400 |
| 3 | | 16.6 | | | 666,000 | 770,400 |

# BS 302 GALVANIZED STEEL WIRE ROPES FOR SHIPS

## 6 x 12 CONSTRUCTION GROUP WITH FIBRE CORES

6 x 12(12/Fibre)FC

| Nominal Diameter | Minimum Breaking Force | | | Minimum Breaking Load | | | Approximate Mass |
|---|---|---|---|---|---|---|---|
| | 1420 N/mm² Tensile Grade | 1570 N/mm² Tensile Grade | 1770 N/mm² Tensile Grade | 1420 N/mm² Tensile Grade | 1570 N/mm² Tensile Grade | 1770 N/mm² Tensile Grade | |
| mm | kN | kN | kN | t | t | t | kg/100m |
| 6 | – | – | 13.3 | – | – | 1.36 | 9.04 |
| 7 | – | – | 18.1 | – | – | 1.85 | 12.3 |
| 8 | 19.0 | 21.0 | – | 1.94 | 2.14 | – | 16.1 |
| 9 | 24.0 | 26.6 | – | 2.45 | 2.71 | – | 20.3 |
| 10 | 29.7 | 32.8 | – | 3.03 | 3.34 | – | 25.1 |
| 12 | 42.7 | 47.3 | – | 4.35 | 4.82 | – | 36.1 |
| 14 | 58.2 | 64.3 | – | 5.93 | 6.55 | – | 49.2 |
| 16 | 76.0 | 84.0 | – | 7.75 | 8.56 | – | 64.3 |

## 6 x 24 CONSTRUCTION GROUP WITH FIBRE CORES

6 x 24(15/9/Fibre)FC & 6 x 24(12/12/F)FC

| Nominal Diameter | Minimum Breaking Force | | Minimum breaking load | | Approximate Mass |
|---|---|---|---|---|---|
| | 1420 N/mm² Tensile Grade | 1570 N/mm² Tensile Grade | 1420 N/mm² Tensile Grade | 1570 N/mm² Tensile Grade | |
| mm | kN | kN | t | t | kg/100m |
| 8 | 25.4 | 28.1 | 2.59 | 2.86 | 19.7 |
| 9 | 32.2 | 35.6 | 3.28 | 3.63 | 24.9 |
| 10 | 39.8 | 44.0 | 4.06 | 4.49 | 30.8 |
| 11 | 48.1 | 53.2 | 4.90 | 5.42 | 37.3 |
| 12 | 57.3 | 63.3 | 5.84 | 6.45 | 44.4 |
| 13 | 67.2 | 74.3 | 6.85 | 7.57 | 52.1 |
| 14 | 77.9 | 86.2 | 7.94 | 8.79 | 60.4 |
| 16 | 102 | 113 | 10.4 | 11.5 | 78.8 |
| 18 | 129 | 142 | 13.1 | 14.5 | 99.8 |
| 19 | 144 | 159 | 14.7 | 16.2 | 111 |
| 20 | 159 | 176 | 16.2 | 17.9 | 123 |
| 22 | 192 | 213 | 19.6 | 21.7 | 149 |
| 24 | 229 | 253 | 23.3 | 25.8 | 177 |
| 26 | 269 | 297 | 27.4 | 30.3 | 208 |
| 28 | 312 | 345 | 31.8 | 35.2 | 241 |
| 32 | 407 | 450 | 41.5 | 45.9 | 315 |
| 35 | 487 | 539 | 49.6 | 54.9 | 377 |
| 36 | 515 | 570 | 52.5 | 58.1 | 399 |
| 38 | 574 | 635 | 58.5 | 64.7 | 445 |
| 40 | 636 | 703 | 64.8 | 71.7 | 493 |

# BS 302 GALVANIZED STEEL WIRE ROPES FOR SHIPS

## 6 x 19 CONSTRUCTION GROUP WITH FIBRE MAIN CORE

6 x 19(9/9/1)FC & 6 x 19(12/6/1)FC

| Nominal Diameter | Minimum Breaking Force | | Minimum Breaking Load | | Approximate Mass |
|---|---|---|---|---|---|
| | 1420 N/mm² Tensile Grade | 1570 N/mm² Tensile Grade | 1420 N/mm² Tensile Grade | 1570 N/mm² Tensile Grade | |
| mm | kN | kN | t | t | kg/100m |
| 6 | – | 19.6 | – | 2.0 | 12.5 |
| 7 | – | 26.6 | – | 2.71 | 17.0 |
| 8 | 27.9 | – | 2.84 | – | 22.1 |
| 10 | 43.6 | – | 4.44 | – | 34.6 |
| 12 | 62.8 | – | 6.40 | – | 49.8 |
| 14 | 85.4 | – | 8.71 | – | 67.8 |
| 16 | 112 | – | 11.4 | – | 88.6 |
| 18 | 141 | – | 14.4 | – | 112 |
| 20 | 174 | – | 17.7 | – | 138 |
| 22 | 211 | – | 21.5 | – | 167 |
| 24 | 251 | – | 25.6 | – | 199 |

## 6 x 37 CONSTRUCTION GROUP WITH FIBRE MAIN CORE

6 x 37(18/12/6/1)FC

| Nominal Diameter | Minimum Breaking Force | | Minimum Breaking Load | | Approximate Mass |
|---|---|---|---|---|---|
| | 1420 N/mm² Tensile Grade | 1570 N/mm² Tensile Grade | 1420 N/mm² Tensile Grade | 1570 N/mm² Tensile Grade | |
| mm | kN | kN | t | t | kg/100m |
| 20 | 168 | 185 | 17.1 | 18.9 | 138 |
| 22 | 203 | 224 | 20.7 | 22.8 | 167 |
| 24 | 241 | 267 | 24.6 | 27.2 | 199 |
| 26 | 283 | 313 | 28.8 | 31.9 | 234 |
| 28 | 328 | 363 | 33.4 | 37.0 | 271 |
| 32 | 429 | 474 | 43.7 | 48.3 | 354 |
| 36 | 543 | 600 | 55.4 | 61.2 | 448 |
| 40 | 670 | 741 | 68.3 | 75.5 | 554 |
| 44 | 811 | 897 | 82.7 | 91.4 | 670 |
| 48 | 965 | 1067 | 98.4 | 109 | 797 |
| 52 | 1133 | 1252 | 115 | 128 | 936 |
| 56 | 1314 | 1452 | 134 | 148 | 1085 |
| 60 | 1508 | 1667 | 154 | 170 | 1246 |
| 64 | 1716 | 1897 | 175 | 193 | 1417 |
| 68 | 1937 | 2142 | 197 | 218 | 1600 |
| 72 | 2172 | 2401 | 221 | 245 | 1794 |

# BS 302 WIRE ROPES FOR CRANES, EXCAVATORS AND GENERAL ENGINEERING PURPOSES

## 6 x 19 AND 6 x 36 CONSTRUCTION GROUPS

| Nominal Diameter | Minimum Breaking Force (1770 N/mm² Tensile Grade) | | Minimum Breaking Force (1770 N/mm² Tensile Grade) | | Approximate Mass | |
|---|---|---|---|---|---|---|
| | Fibre Cored | Steel Cored | Fibre Cored | Steel Cored | Fibre Cored | Steel Cored |
| mm | kN | kN | t | t | kg/100m | kg/100m |
| 6 | 21.0 | 22.7 | 2.14 | 2.32 | 12.9 | 14.3 |
| 7 | 28.6 | 30.9 | 2.92 | 3.15 | 17.7 | 19.5 |
| 8 | 37.4 | 40.3 | 3.81 | 4.11 | 23.1 | 25.5 |
| 9 | 47.3 | 51.0 | 4.82 | 5.20 | 29.2 | 32.2 |
| 10 | 58.4 | 63.0 | 5.95 | 6.42 | 36.1 | 39.8 |
| 11 | 70.7 | 76.2 | 7.21 | 7.77 | 43.7 | 48.2 |
| 12 | 84.1 | 90.7 | 8.57 | 9.25 | 52.0 | 57.3 |
| 13 | 98.7 | 106 | 10.1 | 10.8 | 61.0 | 67.3 |
| 14 | 114 | 124 | 11.6 | 12.6 | 70.8 | 78.0 |
| 16 | 150 | 161 | 15.3 | 16.4 | 92.4 | 102 |
| 18 | 189 | 204 | 19.3 | 20.8 | 117 | 129 |
| 19 | 211 | 227 | 21.5 | 23.1 | 130 | 144 |
| 20 | 234 | 252 | 23.9 | 25.7 | 144 | 159 |
| 22 | 283 | 305 | 28.8 | 31.1 | 175 | 193 |
| 24 | 336 | 363 | 34.3 | 37.0 | 208 | 229 |
| 26 | 395 | 426 | 40.3 | 43.4 | 244 | 269 |
| 28 | 458 | 494 | 46.7 | 50.4 | 283 | 312 |
| 32 | 598 | 645 | 61.0 | 65.7 | 370 | 408 |
| 35 | 716 | 772 | 73.0 | 78.7 | 442 | 488 |
| 36 | 757 | 817 | 77.2 | 83.3 | 468 | 516 |
| 38 | 843 | 910 | 85.9 | 92.8 | 521 | 575 |
| 40 | 935 | 1008 | 95.3 | 103 | 578 | 637 |
| 44 | 1131 | 1220 | 115 | 124 | 699 | 771 |
| 48 | 1346 | 1452 | 137 | 148 | 832 | 917 |
| 52 | 1579 | 1704 | 161 | 174 | 976 | 1076 |
| 54 | 1703 | 1837 | 174 | 187 | 1053 | 1161 |
| 56 | 1832 | 1976 | 187 | 201 | 1132 | 1248 |
| 60 | 2103 | 2268 | 214 | 231 | 1300 | 1433 |

NOTE 1. 3mm to 8mm rope is not available in the 6 x 36 construction group.

NOTE 2. 56mm and 60mm ropes are only available in the 6 x 36 construction group.

NOTE 3. The values for 3, 4, 5 and 6mm ropes are based on 6 x 19 cross-lay construction.

# BS 302 WIRE ROPES FOR CRANES, EXCAVATORS AND GENERAL ENGINEERING PURPOSES

## 17 x 7 AND 18 x 7 CONSTRUCTION GROUPS WITH FIBRE OR STEEL CORE

17 x 7(6/1)Multi-strand & 18 x 7 Multi-strand

| Nominal Diameter | Minimum Breaking Force (1770 N/mm² Tensile Grade) | Minimum Breaking Load (1770 N/mm² Tensile Grade) | Approximate Mass (Fibre Cored) |
|---|---|---|---|
| mm | kN | t | kg/100m |
| 6 | 20.9 | 2.13 | 14.0 |
| 7 | 28.4 | 2.90 | 19.1 |
| 8 | 37.2 | 3.79 | 25.0 |
| 9 | 47.0 | 4.79 | 31.6 |
| 10 | 58.1 | 5.92 | 39.0 |
| 11 | 70.2 | 7.16 | 47.2 |
| 12 | 83.6 | 8.52 | 56.2 |
| 13 | 98.1 | 10.0 | 65.9 |
| 14 | 114 | 11.6 | 76.4 |
| 16 | 149 | 15.2 | 99.8 |
| 18 | 188 | 19.2 | 126 |
| 19 | 210 | 21.4 | 141 |
| 20 | 232 | 23.6 | 156 |
| 22 | 281 | 28.6 | 189 |
| 24 | 334 | 34.0 | 225 |
| 26 | 392 | 40.0 | 264 |

## 34 x 7 CONSTRUCTION GROUP WITH FIBRE OR STEEL CORE

34 x 7 FC Multi-strand & 36 x 7 Multi-strand

| Nominal Diameter | Minimum Breaking Force (1770 N/mm² Tensile Grade) | Minimum Breaking Force (1770 N/mm² Tensile Grade) | Approximate Mass |
|---|---|---|---|
| mm | kN | t | kg/100m |
| 16 | 144 | 14.7 | 99.8 |
| 18 | 182 | 18.6 | 126 |
| 19 | 203 | 20.7 | 141 |
| 20 | 225 | 22.9 | 156 |
| 22 | 272 | 27.7 | 189 |
| 24 | 324 | 33.0 | 225 |
| 26 | 380 | 38.7 | 264 |
| 28 | 441 | 45.0 | 306 |
| 32 | 576 | 58.7 | 399 |
| 35 | 690 | 70.3 | 478 |
| 36 | 729 | 74.3 | 505 |
| 38 | 813 | 82.9 | 563 |
| 40 | 901 | 91.8 | 624 |

# JIS G 3525 WIRE ROPE

| 6 x 7 FC | | | | |
|---|---|---|---|---|
| Dia. of Wire Rope (mm) | Breaking Load(ton) | | | Approx. Weight (kg/m) |
| | Galvanized | Bright or Drawn galv. | Bright | |
| | Grade G | Grade A | Grade B | |
| 3.15 | 0.53 | 0.60 | 0.66 | 0.037 |
| 4 | 0.86 | 0.97 | 1.06 | 0.059 |
| 5 | 1.35 | 1.52 | 1.66 | 0.093 |
| 6.3 | 2.14 | 2.41 | 2.63 | 0.147 |
| 8 | 3.45 | 3.88 | 4.24 | 0.237 |
| 9 | 4.36 | 4.91 | 5.37 | 0.300 |
| 10 | 5.38 | 6.06 | 6.62 | 0.371 |
| 11.2 | 6.75 | 7.61 | 8.31 | 0.465 |
| 12.5 | 8.41 | 9.48 | 10.4 | 0.580 |
| 14 | 10.6 | 11.9 | 13.0 | 0.727 |
| 16 | 13.8 | 15.5 | 17.0 | 0.950 |
| 18 | 17.4 | 19.6 | 21.5 | 1.20 |
| 20 | 21.5 | 24.3 | 26.5 | 1.48 |
| 22.4 | 27.0 | 30.4 | 33.2 | 1.86 |
| (24) | – | (34.9) | (38.2) | (2.14) |
| 25 | 33.6 | 37.9 | 41.4 | 2.32 |
| (26) | – | (41.0) | (44.8) | (2.51) |
| 28 | 42.2 | 47.5 | 51.9 | 2.91 |
| 30 | 48.4 | 54.6 | 59.6 | 3.34 |
| 31.5 | 53.4 | 60.2 | 65.7 | 3.68 |
| 33.5 | 60.4 | 68.1 | 74.3 | 4.16 |
| 35.5 | 67.8 | 76.4 | – | 4.67 |
| 37.5 | 75.7 | – | – | 5.22 |
| 40 | 86.1 | – | – | 5.93 |

| 6 x 24 FC | | | |
|---|---|---|---|
| Dia. of Wire Rope (mm) | Breaking Load(ton) | | Approx. Weight (kg/m) |
| | Galvanized | Bright or Drawn galv. | |
| | Grade G | Grade A | |
| 8 | 2.99 | 3.22 | 0.212 |
| 9 | 3.78 | 4.07 | 0.269 |
| 10 | 4.67 | 5.03 | 0.332 |
| 11.2 | 5.86 | 6.31 | 0.416 |
| (12) | (6.72) | (7.24) | (0.478) |
| 12.5 | 7.30 | 7.85 | 0.519 |
| 14 | 9.15 | 9.85 | 0.651 |
| 16 | 12.0 | 12.9 | 0.850 |
| 18 | 15.1 | 16.3 | 1.08 |
| 20 | 18.7 | 20.1 | 1.33 |
| 22.4 | 23.4 | 25.2 | 1.67 |
| (24) | (26.9) | – | (1.91) |
| 25 | 29.2 | 31.4 | 2.08 |
| 28 | 36.6 | 39.4 | 2.60 |
| 30 | 42.0 | 45.2 | 2.99 |
| 31.5 | 46.3 | 49.9 | 3.29 |
| 33.5 | 52.4 | 56.4 | 3.73 |
| 35.5 | 58.8 | 63.4 | 4.18 |
| 37.5 | 65.7 | 70.7 | 4.67 |
| 40 | 74.7 | 80.4 | 5.31 |
| 42.5 | 84.3 | 90.8 | 6.00 |
| 45 | 94.5 | 102 | 6.72 |
| 47.5 | 105 | 113 | 7.49 |
| 50 | 117 | 126 | 8.30 |

# JIS G 3525 WIRE ROPE

| 6 x 19 FC | | | | |
|---|---|---|---|---|
| Dia. of Wire Rope (mm) | Breaking Load(ton) | | | Approx. Weight (kg/m) |
| | Galvanized | Bright or Drawn galv. | Bright | |
| | Grade G | Grade A | Grade B | |
| 4 | 0.82 | 0.88 | 0.96 | 0.058 |
| 5 | 1.28 | 1.38 | 1.47 | 0.091 |
| 6.3 | 2.03 | 2.19 | 2.33 | 0.144 |
| 8 | 3.28 | 3.53 | 3.76 | 0.233 |
| 9 | 4.15 | 4.46 | 4.76 | 0.295 |
| 10 | 5.12 | 5.51 | 5.88 | 0.364 |
| 11.2 | 6.42 | 6.91 | 7.37 | 0.457 |
| (12) | (7.37) | (7.93) | (8.46) | (0.524) |
| 12.5 | 8.00 | 8.61 | 9.18 | 0.569 |
| 14 | 10.0 | 10.8 | 11.5 | 0.713 |
| 16 | 13.1 | 14.1 | 15.0 | 0.932 |
| 18 | 16.6 | 17.8 | 19.0 | 1.18 |
| 20 | 20.5 | 22.0 | 23.5 | 1.46 |
| 22.4 | 25.7 | 27.6 | 29.5 | 1.83 |
| 25 | 32.0 | 34.4 | 36.7 | 2.28 |
| 28 | 40.1 | 43.2 | 46.1 | 2.85 |
| 30 | 46.1 | 49.6 | 52.9 | 3.28 |

| 6 x 37 FC | | | | |
|---|---|---|---|---|
| Dia. of Wire Rope (mm) | Breaking Load(ton) | | | Approx. Weight (kg/m) |
| | Galvanized | Bright or Drawn galv. | Bright | |
| | Grade G | Grade A | Grade B | |
| 6.3 | 2.00 | 2.15 | 2.29 | 0.143 |
| 8 | 3.22 | 3.47 | 3.70 | 0.23 |
| 9 | 4.08 | 4.39 | 4.68 | 0.291 |
| 10 | 5.03 | 5.42 | 5.78 | 0.359 |
| 11.2 | 6.31 | 6.79 | 7.24 | 0.451 |
| (12) | (7.25) | (7.80) | (8.32) | (0.517) |
| 12.5 | 7.86 | 8.46 | 9.02 | 0.561 |
| 14 | 9.86 | 10.6 | 11.3 | 0.704 |
| 16 | 12.9 | 13.9 | 14.8 | 0.92 |
| 18 | 16.3 | 17.5 | 18.7 | 1.16 |
| 20 | 20.1 | 21.7 | 23.1 | 1.44 |
| 22.4 | 25.3 | 27.2 | 29.0 | 1.80 |
| (24) | (29.0) | – | – | (2.07) |
| 25 | 31.5 | 33.8 | 36.1 | 2.25 |
| 28 | 39.5 | 42.5 | 45.3 | 2.82 |
| 30 | 45.3 | 48.7 | 52.0 | 3.23 |
| 31.5 | 49.9 | 53.7 | 57.3 | 3.57 |
| 33.5 | 56.5 | 60.8 | 64.8 | 4.03 |
| 35.5 | 63.4 | 68.3 | 72.8 | 4.53 |
| 37.5 | 70.8 | 76.2 | 81.2 | 5.05 |
| 40 | 80.5 | 86.7 | 92.4 | 5.75 |
| 42.5 | 90.9 | 97.8 | 104 | 6.49 |
| 45 | 102 | 110 | 117 | 7.28 |
| 47.5 | 114 | 122 | 130 | 8.11 |

# JIS G 3525 WIRE ROPE

| 6 x S(19)FC 6 x W(19)FC 6 x Fi(25)FC 6 x WS(26)FC | | | | |
|---|---|---|---|---|
| Dia. of Wire Rope (mm) | Breaking Load(ton) | | | Approx. Weight (kg/m) |
| | Galvanized | Bright or Drawn galv. | Bright | |
| | Grade G | Grade A | Grade B | |
| 4 | 0.81 | 0.89 | 0.95 | 0.062 |
| 5 | 1.26 | 1.39 | 1.48 | 0.096 |
| 6.3 | 2.00 | 2.20 | 2.35 | 0.153 |
| 8 | 3.23 | 3.55 | 3.79 | 0.247 |
| 9 | 4.08 | 4.50 | 4.80 | 0.312 |
| 10 | 5.04 | 5.55 | 5.92 | 0.386 |
| 11.2 | 6.32 | 6.97 | 7.43 | 0.484 |
| (12) | (7.26) | (8.00) | (8.52) | (0.556) |
| 12.5 | 7.88 | 8.68 | 9.25 | 0.603 |
| 14 | 9.88 | 10.9 | 11.6 | 0.756 |
| 16 | 12.9 | 14.2 | 15.2 | 0.988 |
| 18 | 16.3 | 18.0 | 19.2 | 1.25 |
| 20 | 20.2 | 22.2 | 23.7 | 1.54 |
| 22.4 | 25.3 | 27.9 | 29.7 | 1.94 |
| 25 | 31.5 | 34.7 | 37.0 | 2.41 |
| 28 | 39.5 | 43.5 | 46.4 | 3.02 |
| 30 | 45.4 | 50.0 | 53.3 | 3.47 |
| 31.5 | 50.0 | 55.1 | 58.7 | 3.83 |
| 33.5 | 56.6 | 62.3 | 66.4 | 4.33 |
| 35.5 | 63.5 | 70.0 | 74.6 | 4.86 |
| 37.5 | 70.9 | 78.1 | 83.3 | 5.43 |
| 40 | 80.6 | 88.9 | 94.7 | 6.17 |
| 42.5 | 91.0 | 100 | 107 | 6.97 |
| 45 | 102 | 112 | 120 | 7.81 |
| 47.5 | 114 | 125 | 134 | 8.70 |
| 50 | 126 | 139 | 148 | 9.65 |
| 53 | 142 | 156 | 166 | 10.8 |
| 56 | 158 | 174 | 186 | 12.1 |
| 60 | 181 | 200 | 213 | 13.9 |

| 6 x S(19)IWRC 6 x W(19)IWRC 6 x Fi(25)IWRC 6 x WS(26)IWRC | | | |
|---|---|---|---|
| Dia. of Wire Rope (mm) | Breaking Load(ton) | | Approx. Weight (kg/m) |
| | Bright or Drawn galv. | Bright | |
| | Grade A | Grade B | |
| 10 | 6.34 | 6.75 | 0.430 |
| 11.2 | 7.95 | 8.47 | 0.539 |
| 12.5 | 9.90 | 10.5 | 0.672 |
| 14 | 12.4 | 13.2 | 0.843 |
| 16 | 16.2 | 17.3 | 1.10 |
| 18 | 20.5 | 21.9 | 1.39 |
| 20 | 25.4 | 27.0 | 1.72 |
| 22.4 | 31.8 | 33.9 | 2.16 |
| 25 | 39.6 | 42.2 | 2.69 |
| 28 | 49.7 | 52.9 | 3.37 |
| 30 | 57.1 | 60.7 | 3.87 |
| 31.5 | 62.9 | 67.0 | 4.27 |
| 33.5 | 71.1 | 75.7 | 4.83 |
| 35.5 | 79.9 | 85.1 | 5.42 |
| 37.5 | 89.1 | 94.9 | 6.05 |
| 40 | 101 | 108 | 6.88 |
| 42.5 | 114 | 122 | 7.77 |
| 45 | 128 | 137 | 8.71 |
| 47.5 | 143 | 152 | 9.70 |
| 50 | 158 | 169 | 10.8 |
| 53 | 178 | 190 | 12.1 |
| 56 | 199 | 212 | 13.5 |
| 60 | 228 | 243 | 15.5 |

# JIS G 3525 WIRE ROPE

| 6 x Fi(29)FC 6 x WS(36)FC 6 x WS(41)FC 6 x SeS(37)FC | | | | |
|---|---|---|---|---|
| Dia. of Wire Rope (mm) | Breaking Load(ton) | | | Approx. Weight (kg/m) |
| | Galvanized | Bright or Drawn galv. | Bright | |
| | Grade G | Grade A | Grade B | |
| 8 | 3.29 | 3.63 | 3.87 | 0.253 |
| 9 | 4.17 | 4.59 | 4.89 | 0.321 |
| 10 | 5.14 | 5.67 | 6.04 | 0.396 |
| 11.2 | 6.45 | 7.11 | 7.58 | 0.496 |
| 12.5 | 8.04 | 8.86 | 9.44 | 0.618 |
| 14 | 10.1 | 11.1 | 11.8 | 0.776 |
| 16 | 13.2 | 14.5 | 15.5 | 1.01 |
| 18 | 16.7 | 18.4 | 19.6 | 1.28 |
| 20 | 20.6 | 22.7 | 24.2 | 1.58 |
| 22.4 | 25.8 | 28.4 | 30.3 | 1.99 |
| 25 | 32.2 | 35.4 | 37.8 | 2.47 |
| 28 | 40.3 | 44.4 | 47.4 | 3.10 |
| 30 | 46.3 | 51.0 | 54.4 | 3.56 |
| 31.5 | 51.1 | 56.3 | 59.5 | 3.93 |
| 33.5 | 57.7 | 63.6 | 67.8 | 4.44 |
| 35.5 | 64.8 | 71.4 | 76.1 | 4.99 |
| 37.5 | 72.4 | 79.7 | 84.9 | 5.57 |
| 40 | 82.3 | 90.7 | 96.6 | 6.33 |
| 42.5 | 92.9 | 102 | 109 | 7.15 |
| 45 | 104 | 115 | 122 | 8.01 |
| 47.5 | 116 | 128 | 136 | 8.93 |
| 50 | 129 | 142 | 151 | 9.90 |
| 53 | 145 | 159 | 170 | 11.1 |
| 56 | 161 | 178 | 189 | 12.4 |
| 60 | 185 | 204 | 217 | 14.2 |

| 6 x Fi(29)IWRC 6 x WS(36)IWRC 6 x WS(41)IWRC 6 x SeS(37)IWRC | | | |
|---|---|---|---|
| Dia. of Wire Rope (mm) | Breaking Load(ton) | | Approx. Weight (kg/m) |
| | Bright or Drawn galv. | Bright | |
| | Grade A | Grade B | |
| 10 | 6.49 | 6.90 | 0.44 |
| 11.2 | 8.14 | 8.66 | 0.552 |
| 12.5 | 10.1 | 10.8 | 0.688 |
| 14 | 12.7 | 13.5 | 0.863 |
| 16 | 16.6 | 17.7 | 1.13 |
| 18 | 21.0 | 22.4 | 1.43 |
| 20 | 25.9 | 27.6 | 1.76 |
| 22.4 | 32.5 | 34.6 | 2.21 |
| 25 | 40.5 | 43.2 | 2.75 |
| 28 | 50.9 | 54.1 | 3.45 |
| 30 | 58.4 | 62.1 | 3.96 |
| 31.5 | 64.4 | 68.5 | 4.37 |
| 33.5 | 72.8 | 77.5 | 4.94 |
| 35.5 | 81.8 | 87.0 | 5.55 |
| 37.5 | 91.2 | 97.1 | 6.19 |
| 40 | 104 | 110 | 7.04 |
| 42.5 | 117 | 125 | 7.95 |
| 45 | 131 | 140 | 8.91 |
| 47.5 | 146 | 156 | 9.93 |
| 50 | 162 | 173 | 11.0 |
| 53 | 182 | 194 | 12.4 |
| 56 | 203 | 217 | 13.8 |
| 60 | 234 | 249 | 15.8 |

# JIS G 3525 WIRE ROPE

| 19 x 7 | | | | | |
|---|---|---|---|---|---|
| Dia. of Wire Rope (mm) | Breaking Load(ton) | | | | Approx. Weight (kg/m) |
| | Galvanized | Bright or Drawn galv. | | Bright | |
| | Grade G | Grade A | Grade B | Grade C | |
| 6.00 | 1.96 | 2.16 | 2.36 | 2.55 | 0.153 |
| 6.30 | 2.16 | 2.38 | 2.60 | 2.81 | 0.168 |
| 8.00 | 3.49 | 3.84 | 4.19 | 4.54 | 0.272 |
| 9.00 | 4.41 | 4.86 | 5.30 | 5.74 | 0.344 |
| 9.50 | 4.92 | 5.41 | 5.90 | 6.40 | 0.383 |
| 10.0 | 5.45 | 6.00 | 6.54 | 7.09 | 0.425 |
| 11.2 | 6.83 | 7.52 | 8.21 | 8.89 | 0.533 |
| 12.0 | 7.85 | 8.64 | 9.42 | 10.2 | 0.611 |
| 12.6 | 8.65 | 9.52 | 10.4 | 11.3 | 0.674 |
| 13.0 | 9.21 | 10.1 | 11.1 | 12.0 | 0.717 |
| 14.0 | 10.7 | 11.8 | 12.8 | 13.9 | 0.832 |
| 14.3 | 11.1 | 12.3 | 13.4 | 14.5 | 0.868 |
| 15.0 | 12.3 | 13.5 | 14.7 | 15.9 | 0.955 |
| 16.0 | 13.9 | 15.4 | 16.7 | 18.1 | 1.087 |
| 17.5 | 16.7 | 18.4 | 20.0 | 21.7 | 1.300 |
| 18.0 | 17.7 | 19.4 | 21.2 | 23.0 | 1.375 |
| 19.0 | 19.7 | 21.6 | 23.6 | 25.6 | 1.532 |
| 20.0 | 21.8 | 24.0 | 26.2 | 28.3 | 1.698 |
| 21.0 | 24.0 | 26.4 | 28.9 | 31.3 | 1.872 |
| 22.4 | 27.3 | 30.1 | 32.8 | 35.6 | 2.130 |
| 24.0 | 31.4 | 34.5 | 37.7 | 40.8 | 2.445 |
| 25.0 | 34.1 | 37.5 | 40.9 | 44.3 | 2.653 |
| 25.4 | 35.1 | 38.7 | 42.2 | 45.7 | 2.739 |
| 26.0 | 36.8 | 40.5 | 44.2 | 47.9 | 2.870 |
| 28.0 | 42.7 | 47.0 | 51.3 | 55.6 | 3.328 |
| 28.6 | 44.6 | 49.1 | 53.5 | 58.0 | 3.472 |
| 30.0 | 49.0 | 54.0 | 58.9 | 63.8 | 3.821 |
| 32.0 | 55.8 | 61.4 | 67.0 | 72.6 | 4.347 |
| 34.0 | 63.0 | 69.3 | 75.6 | 81.9 | 4.907 |
| 35.0 | 66.7 | 73.5 | 80.1 | 86.8 | 5.200 |
| 36.0 | 70.6 | 77.7 | 84.8 | 91.9 | 5.502 |
| 38.0 | 78.7 | 86.6 | 94.5 | 102 | 6.130 |
| 40.0 | 87.2 | 96.0 | 105 | 113 | 6.792 |

| 35 x 7 | | | | |
|---|---|---|---|---|
| Dia. of Wire Rope (mm) | Breaking Load(ton) | | | Approx. Weight (kg/m) |
| | Bright or Drawn galv. | | Bright | |
| | Grade A | Grade B | Grade C | |
| 16.0 | 16.4 | 17.9 | 19.4 | 1.14 |
| 17.5 | 19.6 | 21.4 | 23.2 | 1.36 |
| 18.0 | 20.7 | 22.6 | 24.5 | 1.44 |
| 19.0 | 23.1 | 25.2 | 27.3 | 1.61 |
| 20.0 | 25.6 | 27.9 | 30.3 | 1.78 |
| 21.0 | 28.2 | 30.8 | 33.4 | 1.96 |
| 22.4 | 32.1 | 35.0 | 38.0 | 2.23 |
| 24.0 | 36.9 | 40.2 | 43.6 | 2.56 |
| 25.0 | 40.0 | 43.7 | 47.3 | 2.78 |
| 25.4 | 41.3 | 45.1 | 48.8 | 2.87 |
| 26.0 | 43.3 | 47.2 | 51.2 | 3.01 |
| 28.0 | 50.2 | 54.8 | 59.3 | 3.49 |
| 28.6 | 52.4 | 57.1 | 61.9 | 3.64 |
| 30.0 | 57.6 | 62.9 | 68.1 | 4.00 |
| 32.0 | 65.6 | 71.5 | 77.5 | 4.55 |
| 34.0 | 74.0 | 80.7 | 87.5 | 5.14 |
| 35.0 | 78.4 | 85.6 | 92.7 | 5.45 |
| 36.0 | 83.0 | 90.5 | 98.1 | 5.76 |

# UNIQUE ROPE

YOUNG HEUNG'S "UNIQUE ROPE" BRAND FOR CRANES

## WHAT'S "UNIQUE ROPE"?

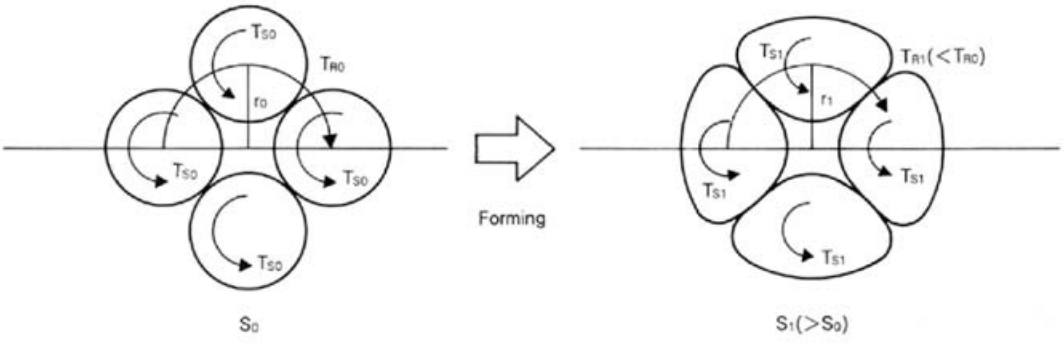
YOUNG HEUNG'S "Unique Rope" is manufactured with superior materials, each perfectly designed to create the finest quality products. "Unique Rope" is finished through a special forming process after closing the wire rope strands.
Each strand is formed into a triangular shape and the outer surface is abraded.
Generally, it's well known that wire ropes tend to spin or rotate under load.
This is inherent to the nature of standard types of ropes due to the variance of the helixes of the individual wires and strands.
YOUNG HEUNG'S "Unique Rope" was developed to meet the special demand of various kinds of cranes.

## WHY IS "UNIQUE ROPE" NON-ROTATING?

The non-rotating property of wire rope is represented by the rotation index Ir which is expressed by the following formula :

$$Ir = | Tr - n.ts | / s$$

Where
- Tr is the rotation torque of rope
- Ts is the rotation torque of strand
- n is the number of strands
- s is the resistance to rotation




by the special procedures used in our production.
We have virtually eliminated the traditional problem of the helix phenomenon.

# UNIQUE ROPE

## CHARACTERISTICS :

### HIGHER BREAKING STRENGTH

The breaking strength of unique rope is higher than that of 6-strand ropes of equivalent diameter ; Hence the margin of safety is higher.

### LESS CRUSHING

Unique rope with stands abrasion and fits the grooves of drum or sheave with a low friction level.
This improves life span of the rope, especially in applications which have multiple layers on the drums.

### SUPERIOR NON-ROTATING

The inherent nature to spin or rotate under load, is controlled to a minimum by "Unique Rope" which has been confirmed through many fields tests.

### DURABILITY

The smooth surface of this rope reduces and distributes pressure on itself as well as the sheave and drum.

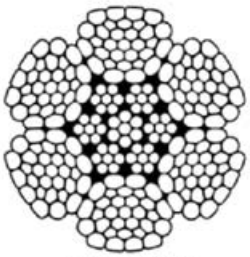
## Standard Diameter and Breaking Load

| 4 x SeS(39)+FC | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Diameter of Rope (mm) | Sectional Area ($mm^2$) | Breaking Load | | | | | | Approx. Weight (kg/m) |
| | | S Grade | | H Grade | | SH Grade | | |
| | | kN | ton | kN | ton | kN | ton | |
| 8 | 28.6 | 37.5 | 3.83 | 40.9 | 4.10 | 44.3 | 4.52 | 0.257 |
| 9 | 36.2 | 47.5 | 4.84 | 51.8 | 5.28 | 56.1 | 5.72 | 0.326 |
| 10 | 44.7 | 58.6 | 5.98 | 63.9 | 6.52 | 69.2 | 7.06 | 0.402 |
| 11.2 | 56.1 | 73.6 | 7.50 | 80.2 | 8.18 | 86.8 | 8.86 | 0.504 |
| 12 | 64.4 | 84.4 | 8.61 | 92.1 | 9.39 | 99.7 | 10.2 | 0.579 |
| 12.5 | 69.8 | 91.6 | 9.34 | 99.9 | 10.2 | 108 | 11.0 | 0.628 |
| 14 | 87.6 | 115 | 11.7 | 125 | 12.8 | 136 | 13.8 | 0.788 |
| 16 | 114 | 150 | 15.3 | 164 | 16.7 | 177 | 18.1 | 1.03 |
| 18 | 145 | 190 | 19.4 | 207 | 21.1 | 224 | 22.9 | 1.30 |
| 19 | 161 | 212 | 21.6 | 231 | 23.5 | 250 | 25.5 | 1.45 |
| 20 | 179 | 235 | 23.9 | 256 | 26.1 | 277 | 28.2 | 1.61 |
| 22 | 216 | 284 | 28.9 | 309 | 31.6 | 335 | 34.2 | 1.95 |
| 22.4 | 224 | 294 | 30.0 | 321 | 32.7 | 347 | 35.4 | 2.20 |
| 24 | 257 | 338 | 34.4 | 368 | 37.6 | 399 | 40.7 | 2.32 |
| 25 | 279 | 367 | 37.4 | 400 | 40.8 | 433 | 44.1 | 2.51 |
| 26 | 302 | 396 | 40.4 | 432 | 44.1 | 468 | 47.7 | 2.72 |
| 28 | 350 | 460 | 46.9 | 501 | 51.1 | 543 | 55.4 | 3.15 |
| 30 | 402 | 528 | 53.8 | 575 | 58.7 | 623 | 63.5 | 3.62 |
| 31.5 | 444 | 582 | 59.3 | 634 | 64.7 | 687 | 70.1 | 3.99 |
| 32 | 458 | 600 | 61.2 | 655 | 66.8 | 709 | 72.3 | 4.12 |
| 33.5 | 502 | 658 | 67.1 | 718 | 73.2 | 777 | 79.2 | 4.51 |
| 34 | 517 | 678 | 69.1 | 739 | 75.4 | 800 | 81.6 | 4.65 |
| 35.5 | 563 | 739 | 75.4 | 806 | 82.2 | 872 | 89.0 | 5.07 |
| 38 | 645 | 846 | 86.3 | 923 | 94.2 | 999 | 102 | 5.75 |
| 40 | 714 | 937 | 95.6 | 1,020 | 104 | 1,100 | 112 | 6.37 |
| 44 | 563 | 1,130 | 115 | 1,230 | 125 | 1,290 | 132 | 7.71 |
| 48 | 1,027 | 1,340 | 136 | 1,460 | 149 | 1,550 | 158 | 9.17 |

# SWAGED WIRE ROPE

## OUR CUSTOMERS SAY IT BEST!
## SWAGED WIRE ROPE IS THE BEST!!

Our Swaged wire ropes were developed to meet the quality demands of logging operations but can be adapted for other uses.

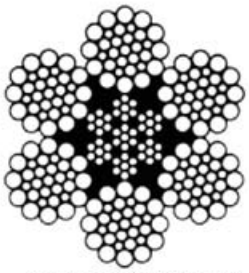


SWAGED ROPES
1" B/L = 123,000Lbs

Swaged wire ropes could be used wherever increased strengths or lasting longer service life are desired.
Our swaged wire ropes are used for logging operations especially.
Some advantages of our swaged wire rope are :

- Higher strength than standard ropes
- Greater durable resistance and longer life
- Resistance to crushing

This really is our best product confirmed by our clients



REGULAR ROUND ROPES
1" B/L = 89,800Lbs

We have been continuously striving to provide the most competitive rope for your specific operation.
We'll continue to make improvements and research our conventional wire rope.
Imagine the powerful and positive impression the "Swaged Wire Rope" gives your business.
If you have any questions, please feel to contact us for additional information.

## CHARACTERISTICS :

### STRENGTH

Our Swaged wire rope increases the working load from greater surface area on outer wires and a compact cross-section with minimum voids, also a higher strength than an unswayed wire rope of comparable size and diameter.

### DURABILITY

The smooth surface of a rotary swaged rope reduces and distributes pressures on the rope, as well as the sheaves and drum, and results in longer life.

### CRUSHING

The rope's compactness reduces the amount of internal voids so that it provides a much higher resistance to crushing.
This improves the service life of the rope, especially in those applications which have multiple layers on the drums.

# SWAGED WIRE ROPE

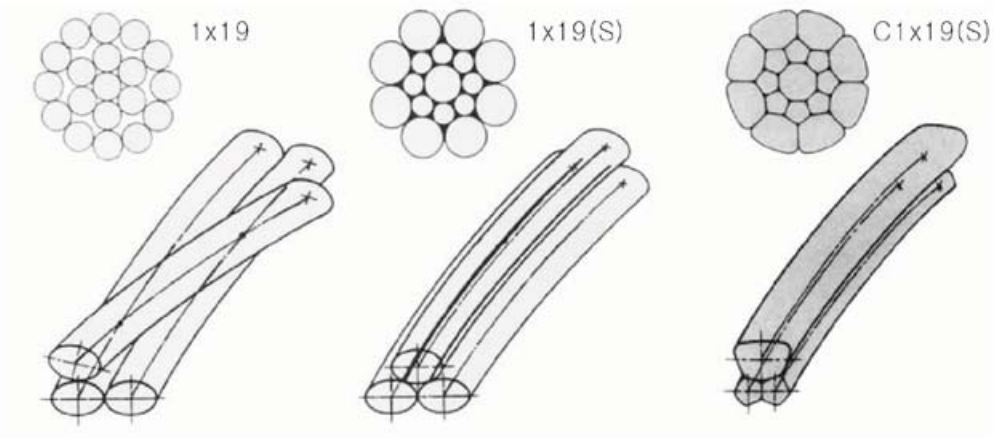
| Swaged Wire Rope<br>6 x 25(Fi)S+IWRC, 6 x 26(WS)S+IWRC, 6 x 29(Fi)S+IWRC<br>6 x 31(WS)S+IWRC, 6 x 36(WS)S+IWRC, 6 x 41(WS)S+IWRC | | | | | | |
|---|---|---|---|---|---|---|
| Dia of Wire Rope (in) | NORMAL TYPE | | | SUPER TYPE | | |
| | Breaking Load(Lbs) | | Approx. Weight (Lb/ft) | Breaking Load(Lbs) | | Approx. Weight (Lb/ft) |
| | Grade IPS | Grade EIPS | | Grade IPS | Grade EIPS | |
| 3/8 | 16,100 | 18,500 | 0.330 | 17,700 | 20,400 | 0.350 |
| 7/16 | 21,100 | 24,300 | 0.420 | 23,100 | 26,600 | 0.460 |
| 1/2 | 27,700 | 31,800 | 0.550 | 30,300 | 34,800 | 0.610 |
| 9/16 | 34,800 | 40,000 | 0.710 | 38,100 | 43,800 | 0.780 |
| 5/8 | 42,600 | 49,000 | 0.870 | 47,000 | 54,000 | 0.965 |
| 11/16 | 51,300 | 59,000 | 1.05 | 56,500 | 65,000 | 1.16 |
| 3/4 | 60,900 | 70,000 | 1.25 | 67,000 | 77,000 | 1.38 |
| 7/8 | 82,600 | 95,000 | 1.70 | 90,400 | 104,000 | 1.87 |
| 1 | 107,000 | 123,000 | 2.22 | 115,700 | 133,000 | 2.44 |
| 1-1/8 | 133,000 | 153,000 | 2.81 | 138,300 | 159,000 | 3.09 |
| 1-1/4 | 161,700 | 186,000 | 3.47 | 169,600 | 195,000 | 3.82 |
| 1-3/8 | 193,000 | 222,000 | 4.20 | 203,500 | 234,000 | 4.62 |
| 1-1/2 | 230,000 | 264,500 | 5.00 | 242,500 | 279,000 | 5.51 |
| 1-5/8 | 270,000 | 310,000 | 5.86 | 285,000 | 327,000 | 6.47 |
| 1-3/4 | 314,000 | 360,000 | 6.80 | 331,000 | 380,000 | 7.51 |

| Swaged Wire Rope<br>6 x 25(Fi)S+IWRC, 6 x 26(WS)S+IWRC, 6 x 29(Fi)S+IWRC<br>6 x 31(WS)S+IWRC, 6 x 36(WS)S+IWRC, 6 x 41(WS)S+IWRC | | | | | | |
|---|---|---|---|---|---|---|
| Dia of Wire Rope (mm) | NORMAL TYPE | | | SUPER TYPE | | |
| | Breaking Load(ton) | | Approx. Weight (kg/m) | Breaking Load(ton) | | Approx. Weight (kg/m) |
| | Grade B | Grade C | | Grade B | Grade C | |
| 10 | 8.13 | 9.03 | 0.520 | 8.89 | 9.9 | 0.569 |
| 12 | 11.7 | 12.9 | 0.749 | 12.8 | 14.2 | 0.819 |
| 14 | 16.0 | 17.7 | 1.01 | 17.5 | 19.3 | 1.11 |
| 16 | 20.8 | 23.1 | 1.33 | 22.7 | 25.3 | 1.45 |
| 18 | 26.4 | 29.3 | 1.68 | 28.8 | 32.0 | 1.84 |
| 20 | 32.6 | 36.1 | 2.08 | 35.6 | 39.4 | 2.27 |
| 22.4 | 40.8 | 45.3 | 2.61 | 44.6 | 49.5 | 2.86 |
| 24 | 46.8 | 52.0 | 3.00 | 51.2 | 56.9 | 3.28 |
| 26 | 55.1 | 61.0 | 3.52 | 60.2 | 66.7 | 3.85 |
| 28 | 63.8 | 70.8 | 4.08 | 69.7 | 77.4 | 4.46 |
| 30 | 73.2 | 81.2 | 4.68 | 80.0 | 88.7 | 5.12 |
| 31.5 | 80.7 | 89.5 | 5.17 | 88.2 | 97.9 | 5.65 |
| 33.5 | 91.4 | 101.3 | 5.84 | 99.8 | 110.7 | 6.39 |
| 35.5 | 102.6 | 113.7 | 6.56 | 112.1 | 124.3 | 7.17 |
| 38.0 | 117.0 | 127.0 | 7.51 | 127.0 | 137.0 | 8.21 |
| 40.0 | 130.0 | 141.0 | 8.32 | 141.0 | 151.0 | 9.10 |
| 44.0 | 157.3 | 168.0 | 10.1 | 170.0 | 182.0 | 11.0 |

# COMPACT WIRE ROPE

## 1.THIS COMPACT STRAND WIRE ROPE;

Wire rope consists of wire classified into point contact lay rope & linear contact rope per the condition of wire contact. The rope improves point contact to linear contact.
Development of compacted strand rope allows the most improved linear contact.
The rope's life is longer and dramatically extends its' usage.
In accordance with this special need, Young Heung installed a new modernized facility and developed the compacted strand rope. Since then, we have entered into mass production and supply to export markets with Young Heung's accumulated qualified technology.




## 2.SPECIALITY

With superiority on breaking load, endurance, wear resistance, the longer life cycle enables to raise the production & production proficiency

- ◆ Higher Breaking Load
  Breaking load is higher than normal rope
- ◆ Superior Endurance
  The wire, consisting of strand which are elaborately compacted, improves the endurance compared to standard ropes.
- ◆ Superior Wear Resistance
  The flattened strand surface enables less abrasion as the rope contacts drum or sheave.
- ◆ Flexibility
  Though the flexibility is less than normal rope but this does not cause a problem considering the application of compact rope.

## 3.APPLICATION

The rope's application is similar to normal ropes,but this "Compact" strand rope is very highly recommended in the area of mining, fishing or construction.

# COMPACT WIRE ROPE

| Compact Wire Rope 6 x 19(S)C+FC, 6 x 26(WS)C+FC | | | | | | |
|---|---|---|---|---|---|---|
| Dia.of Wire Rope (mm) | Dia.of Wire Rope (in.) | Breaking Load(ton) | | | Approx. Weight (kg/m) | Approx. Weight (Lb/ft) |
| | | Grade A | Grade B | Grade C | | |
| 10 | – | 6.41 | 6.99 | 7.57 | 0.413 | 0.278 |
| 11 | 7/16 | 7.76 | 8.46 | 9.16 | 0.500 | 0.336 |
| 12 | – | 9.17 | 10.0 | 10.9 | 0.594 | 0.399 |
| 13 | 1/2 | 10.8 | 11.7 | 12.8 | 0.697 | 0.468 |
| 14 | 9/16 | 12.7 | 13.9 | 15.0 | 0.820 | 0.551 |
| 16 | 5/8 | 16.4 | 17.9 | 19.4 | 1.06 | 0.712 |
| 18 | 11/16 | 20.7 | 22.6 | 24.5 | 1.34 | 0.90 |
| 19 | 3/4 | 23.1 | 25.2 | 27.3 | 1.49 | 1.00 |
| 20 | 13/16 | 25.6 | 27.9 | 30.3 | 1.65 | 1.11 |
| 22 | 7/8 | 31.0 | 33.8 | 36.6 | 2.00 | 1.34 |
| 24 | 15/16 | 36.9 | 40.2 | 43.6 | 2.38 | 1.60 |
| 26 | 1 | 42.6 | 46.5 | 50.4 | 2.75 | 1.85 |
| 28 | 1+1/8 | 50.9 | 55.6 | 60.2 | 3.28 | 2.20 |
| 30 | – | 57.7 | 62.9 | 68.2 | 3.71 | 2.49 |
| 32 | 1+1/4 | 65.6 | 71.6 | 77.6 | 4.22 | 2.84 |
| 34 | – | 74.1 | 80.8 | 87.6 | 4.77 | 3.21 |
| 35 | 1+3/8 | 78.5 | 85.6 | 92.8 | 5.05 | 3.39 |
| 36 | – | 83.1 | 90.6 | 98.2 | 5.35 | 3.60 |
| 38 | 1+1/2 | 92.6 | 101 | 109 | 5.96 | 4.01 |
| 40 | – | 102 | 111 | 121 | 6.60 | 4.44 |

| Compact Wire Rope 6 x 19(S)C+IWRC, 6 x 26(WS)C+IWRC | | | | | | |
|---|---|---|---|---|---|---|
| Dia.of Wire Rope (mm) | Dia.of Wire Rope (in.) | Breaking Load(ton) | | | Approx. Weight (kg/m) | Approx. Weight (Lb/ft) |
| | | Grade A | Grade B | Grade C | | |
| 10 | – | 7.13 | 7.78 | 8.42 | 0.453 | 0.304 |
| 11 | 7/16 | 8.63 | 9.41 | 10.19 | 0.548 | 0.368 |
| 12 | – | 10.3 | 11.2 | 12.1 | 0.652 | 0.438 |
| 13 | 1/2 | 12.1 | 13.1 | 14.2 | 0.765 | 0.514 |
| 14 | 9/16 | 14.1 | 15.4 | 16.7 | 0.90 | 0.605 |
| 16 | 5/8 | 18.4 | 19.9 | 21.5 | 1.16 | 0.780 |
| 18 | 11/16 | 23.3 | 25.2 | 27.3 | 1.47 | 0.988 |
| 19 | 3/4 | 26.0 | 28.1 | 30.4 | 1.64 | 1.10 |
| 20 | 13/16 | 28.8 | 31.1 | 33.7 | 1.81 | 1.22 |
| 22 | 7/8 | 34.9 | 37.6 | 40.7 | 2.19 | 1.47 |
| 24 | 15/16 | 41.5 | 44.8 | 48.5 | 2.61 | 1.75 |
| 26 | 1 | 48.0 | 51.7 | 56.1 | 3.01 | 2.02 |
| 28 | 1+1/8 | 57.3 | 61.8 | 67.0 | 3.60 | 2.42 |
| 30 | – | 64.9 | 70.0 | 75.8 | 4.07 | 2.74 |
| 32 | 1+1/4 | 73.9 | 79.6 | 86.3 | 4.63 | 3.11 |
| 34 | – | 83.4 | 89.9 | 97.4 | 5.23 | 3.51 |
| 35 | 1+3/8 | 88.4 | 95.3 | 103.2 | 5.54 | 3.72 |
| 36 | – | 93.5 | 100 | 109 | 5.86 | 3.94 |
| 38 | 1+1/2 | 104 | 112 | 121 | 6.53 | 4.39 |
| 40 | – | 115 | 124 | 134 | 7.24 | 4.87 |

# COMPACT WIRE ROPE

| Compact Wire Rope 6 x 31(WS)C+FC, 6 x 36(WS)C+FC, 6 x 41(WS)C+FC | | | | | | |
|---|---|---|---|---|---|---|
| Dia.of Wire Rope (mm) | Dia.of Wire Rope (in.) | Breaking Load(ton) | | | Approx. Weight (kg/m) | Approx. Weight (Lb/ft) |
| | | Grade A | Grade B | Grade C | | |
| 10 | – | 6.5 | 7.1 | 7.7 | 0.424 | 0.285 |
| 11 | 7/16 | 7.9 | 8.6 | 9.4 | 0.513 | 0.345 |
| 12 | – | 9.3 | 10.2 | 11.0 | 0.611 | 0.411 |
| 13 | 1/2 | 10.9 | 12.0 | 12.9 | 0.717 | 0.482 |
| 14 | 9/16 | 12.9 | 14.1 | 15.3 | 0.843 | 0.566 |
| 16 | 5/8 | 16.6 | 18.1 | 19.7 | 1.09 | 0.732 |
| 18 | 11/16 | 21.1 | 23.0 | 24.9 | 1.37 | 0.921 |
| 19 | 3/4 | 23.5 | 25.6 | 27.7 | 1.53 | 1.03 |
| 20 | 13/16 | 26.0 | 28.4 | 30.8 | 1.70 | 1.14 |
| 22 | 7/8 | 31.5 | 34.4 | 37.2 | 2.05 | 1.38 |
| 24 | 15/16 | 37.5 | 40.9 | 44.3 | 2.44 | 1.64 |
| 26 | 1 | 43.3 | 47.3 | 51.2 | 2.82 | 1.90 |
| 28 | 1+1/8 | 51.8 | 56.5 | 61.2 | 3.37 | 2.26 |
| 30 | – | 58.6 | 63.9 | 69.3 | 3.82 | 2.57 |
| 32 | 1+1/4 | 66.7 | 72.7 | 78.8 | 4.34 | 2.92 |
| 34 | – | 75.3 | 82.1 | 89.0 | 4.90 | 3.29 |
| 35 | 1+3/8 | 79.8 | 87.0 | 94.3 | 5.19 | 3.49 |
| 36 | – | 84.4 | 92.1 | 99.8 | 5.50 | 3.70 |
| 38 | 1+1/2 | 94.0 | 102 | 111 | 6.13 | 4.12 |
| 40 | – | 104 | 113 | 123 | 6.79 | 4.56 |

| Compact Wire Rope 6 x 31(WS)C+IWRC, 6 x 36(WS)C+IWRC, 6 x 41(WS)C+IWRC | | | | | | |
|---|---|---|---|---|---|---|
| Dia.of Wire Rope (mm) | Dia.of Wire Rope (in.) | Breaking Load(ton) | | | Approx. Weight (kg/m) | Approx. Weight (Lb/ft) |
| | | Grade A | Grade B | Grade C | | |
| 10 | – | 7.1 | 7.8 | 8.5 | 0.466 | 0.313 |
| 11 | 7/16 | 8.7 | 9.5 | 10.3 | 0.564 | 0.379 |
| 12 | – | 10.2 | 11.2 | 12.1 | 0.672 | 0.452 |
| 13 | 1/2 | 12.0 | 13.2 | 14.2 | 0.789 | 0.530 |
| 14 | 9/16 | 14.2 | 15.5 | 16.8 | 0.913 | 0.614 |
| 16 | 5/8 | 18.3 | 19.9 | 21.7 | 1.19 | 0.801 |
| 18 | 11/16 | 23.2 | 25.3 | 27.4 | 1.51 | 1.02 |
| 19 | 3/4 | 25.9 | 28.2 | 30.5 | 1.68 | 1.13 |
| 20 | 13/16 | 28.6 | 31.2 | 33.9 | 1.86 | 1.25 |
| 22 | 7/8 | 34.7 | 37.8 | 40.9 | 2.25 | 1.51 |
| 24 | 15/16 | 41.3 | 45.0 | 48.7 | 2.68 | 1.80 |
| 26 | 1 | 47.6 | 52.0 | 56.3 | 3.14 | 2.11 |
| 28 | 1+1/8 | 57.0 | 62.2 | 67.3 | 3.64 | 2.45 |
| 30 | – | 64.5 | 70.3 | 76.2 | 4.19 | 2.82 |
| 32 | 1+1/4 | 73.4 | 80.0 | 86.7 | 4.76 | 3.20 |
| 34 | – | 82.8 | 90.3 | 97.9 | 5.37 | 3.61 |
| 35 | 1+3/8 | 87.8 | 95.7 | 103 | 5.71 | 3.84 |
| 36 | – | 92.8 | 101 | 110 | 6.03 | 4.05 |
| 38 | 1+1/2 | 103 | 112 | 122 | 6.71 | 4.51 |
| 40 | – | 114 | 124 | 135 | 7.47 | 5.02 |

# COMPACT WIRE ROPE

| Compact Wire Rope 19 x 7 | | | | |
|---|---|---|---|---|
| Dia.of Wire Rope (mm) | Breaking Load(ton) | | | Approx. Weight (kg/m) |
| | Bright or Drawn galv. | | Bright | |
| | Grade A | Grade B | Grade C | |
| 9.00 | 5.88 | 6.42 | 6.95 | 0.390 |
| 9.50 | 6.56 | 7.15 | 7.75 | 0.434 |
| 10.0 | 7.26 | 7.92 | 8.58 | 0.481 |
| 11.2 | 9.11 | 9.94 | 10.8 | 0.604 |
| 12.0 | 10.5 | 11.4 | 12.4 | 0.693 |
| 12.6 | 11.5 | 12.6 | 13.6 | 0.764 |
| 13.0 | 12.3 | 13.4 | 14.5 | 0.813 |
| 14.0 | 14.2 | 15.5 | 16.8 | 0.943 |
| 14.3 | 14.9 | 16.2 | 17.6 | 0.984 |
| 15.0 | 16.3 | 17.8 | 19.3 | 1.083 |
| 16.0 | 18.6 | 20.3 | 22.0 | 1.232 |
| 17.5 | 22.2 | 24.3 | 26.3 | 1.474 |
| 18.0 | 23.5 | 25.7 | 27.8 | 1.559 |
| 19.0 | 26.2 | 28.6 | 31.0 | 1.737 |
| 20.0 | 29.1 | 31.7 | 34.3 | 1.925 |
| 21.0 | 32.0 | 34.9 | 37.9 | 2.122 |
| 22.4 | 36.4 | 39.8 | 43.1 | 2.415 |
| 24.0 | 41.8 | 45.6 | 49.4 | 2.772 |
| 25.0 | 45.4 | 49.5 | 53.7 | 3.008 |
| 25.4 | 46.9 | 51.1 | 55.4 | 3.105 |
| 28.0 | 56.9 | 62.1 | 67.3 | 3.773 |
| 30.0 | 65.4 | 71.3 | 77.3 | 4.331 |
| 32.0 | 74.4 | 81.1 | 87.9 | 4.928 |
| 34.0 | 84.0 | 91.6 | 99.2 | 5.563 |
| 35.0 | 89.0 | 97.1 | 105 | 5.895 |
| 36.0 | 94.1 | 103 | 111 | 6.237 |
| 38.0 | 105 | 114 | 124 | 6.949 |

| Compact Wire Rope 35 x 7 | | | | | |
|---|---|---|---|---|---|
| Dia.of Wire Rope (mm) | Breaking Load(ton) | | | | Approx. Weight (kg/m) |
| | Galvanized | Bright or Drawn galv. | | Bright | |
| | Grade G | Grade A | Grade B | Grade C | |
| 16.0 | 17.8 | 19.6 | 21.4 | 23.1 | 1.32 |
| 17.5 | 21.3 | 23.4 | 25.6 | 27.7 | 1.58 |
| 18.0 | 22.5 | 24.8 | 27.0 | 29.3 | 1.67 |
| 19.0 | 25.1 | 27.6 | 30.1 | 32.6 | 1.86 |
| 20.0 | 27.8 | 30.6 | 33.4 | 36.2 | 2.06 |
| 21.0 | 30.7 | 33.7 | 36.8 | 39.9 | 2.28 |
| 22.4 | 34.9 | 38.4 | 41.9 | 45.4 | 2.59 |
| 24.0 | 40.1 | 44.1 | 48.1 | 52.1 | 2.97 |
| 25.0 | 43.5 | 47.8 | 52.2 | 56.5 | 3.22 |
| 25.4 | 44.9 | 49.4 | 53.8 | 58.3 | 3.33 |
| 26.0 | 47.0 | 51.7 | 56.4 | 61.1 | 3.49 |
| 28.0 | 54.5 | 60.0 | 65.4 | 70.9 | 4.04 |
| 28.6 | 56.9 | 62.6 | 68.3 | 73.9 | 4.22 |
| 30.0 | 62.6 | 68.8 | 75.1 | 81.4 | 4.64 |
| 32.0 | 71.2 | 78.3 | 85.5 | 92.6 | 5.28 |
| 34.0 | 80.4 | 88.4 | 96.5 | 105 | 5.96 |
| 35.0 | 85.2 | 93.7 | 102 | 111 | 6.32 |
| 36.0 | 90.1 | 99.1 | 108 | 117 | 6.69 |
| 38.0 | 100 | 110 | 121 | 131 | 7.45 |

# YG-5 WIRE ROPE

**YG-5 means YoungHeung + Galvanization**
**It is ultra highest corrosion resistance galvanized wire**
**in producing with accumulated**
**Young Heung's advanced technology.**

## Environments of usage

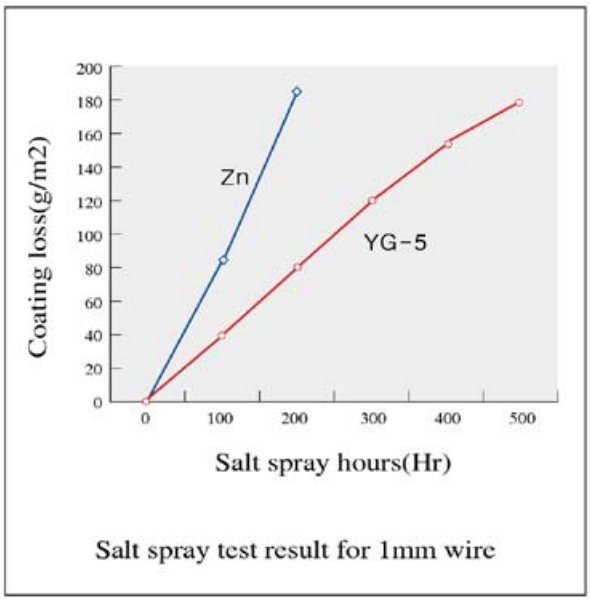
YG-5 is over 2 times longer resistance for red rust comparing to zinc galvanized wire.
The superiority of corrosion resistance is enable to specially perform without any limit of environments.
Especially, YG-5 is suitable for corrosive environment such as seashore ocean working site.

## Youngwire's Products

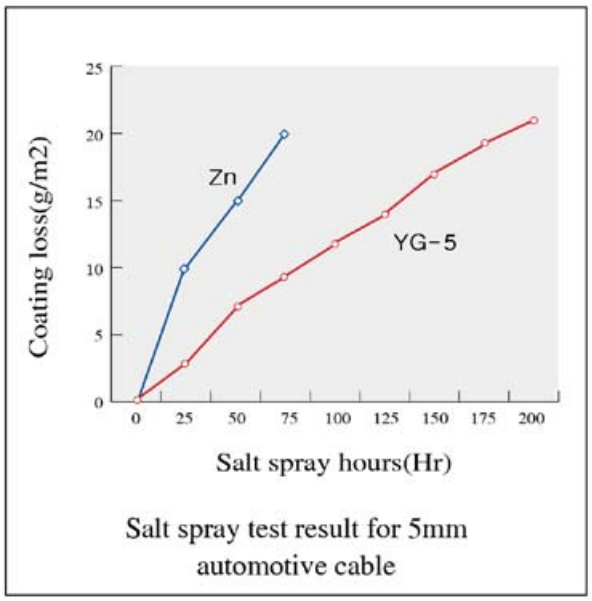
YG-5 is applicable to all kinds of Steel Wire products
such as Agricultural Wires, Automotive Cable, Wire Rope for fishing industry etc.
We make sure this higher new invented item will be obviously make out our customer's sucessful business.

## Corrosion resistance

YG-5 has over 2 times longer resistance to corrosion
than normal Hot Dipped Zinc Coating




Salt spray test result for 1mm wire




Salt spray test result for 5mm automotive cable

Salt spray test : ASTM B 117

# YG-5 WIRE ROPE

The rust occurrence for 1mm
zinc galvanized wire after 200hours

The rust occurrence for 1mm
YG-5 wire after 500hours

## Mechanical properties

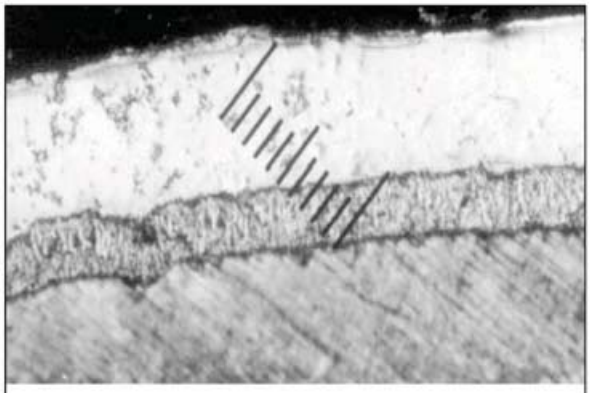
The mechanical properties of YG-5 wire is similar to those of Zinc Galvanized Wire.

Mechanical properties of 1mm Galvanized Patented Wire

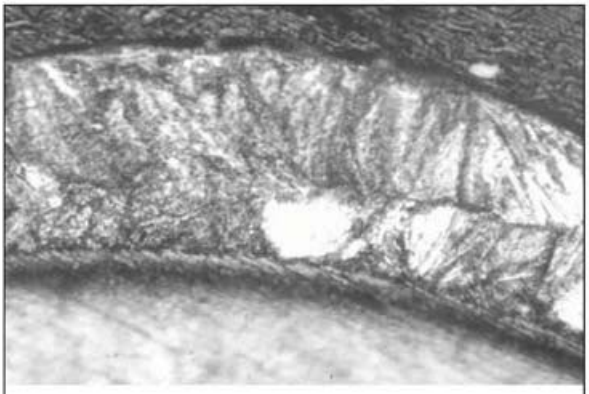
| | Normal Zn coating | YG-5 |
|---|---|---|
| T/S(Kg/mm2) | 108 | 112 |
| T/O(100D) | 20 | 19 |

## Homogeneous coating film

YG-5 has a more homogeneous and ductile coating compared to Zinc Coating.



Microstructure of zinc
hot-dip galvanized wire



Microstructure of YG-5
galvanized wire

## Hardness

YG-5 has a two times harder than Zinc Coating Wire,
it has surely better character for abrasion resistance & scratch.

# YG-5 WIRE ROPE

## After-draw ability

After YG-5 coating, after-draw ability is similar to those of Zinc Coating Wire.

## Surface appearance

The surface of YG-5 is appeared dark gray, no luster.
Accordingly, it doesn't have the diffused reflection.

## Production range

1. WIRE ROPE

| Construction | Range of product | Construction | Range of product |
|---|---|---|---|
| 6x7 | 6.0mm - 26.0mm | 6x19 | 10.0mm - 40.0mm |
| 6x24 | 12.0mm - 40.0mm | 6x37 | 10.0mm - 40.0mm |
| 6x19(s) | 8.0mm - 32.0mm | 6x25(Fi) | 8.0mm - 40.0mm |
| 6x26(ws) | 8.0mm - 32.0mm | 6x36(ws) | 8.0mm - 40.0mm |
| 8x19(s) | 10.0mm - 40.0mm | 8x36(ws) | 10.0mm - 40.0mm |

2. CONTROL CABLE

| TYPE | Range of product | Construction |
|---|---|---|
| Strand Type | 1.0mm - 5.0mm | 1x7, 3+9, 1x19 |
| Rope Type | 1.0mm - 5.0mm | 7x7, 8x7+1x19, 7x19 |

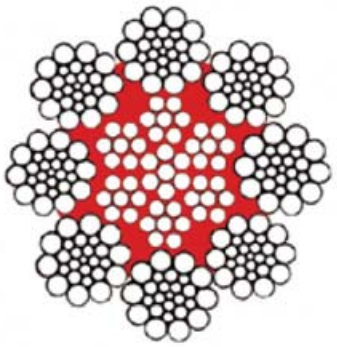
## Main application

YG-5 is applicable to many various industry
YG-5 of high corrosion resistance has
conspicuous character to resist rust from sea water.

Automotive cable
Wire rope for fishing industry
Wire rope for shipping industry
Guard cable
Protection wire for a rockslide
Farm industry

# PLASTIC IMPREGNATED WIRE ROPE

## SEMI-IP ROPE



**YoungHeung's SEMI - IP ROPE**
**with plastic impregnated IWRC**

Our Semi-IP Rope serves much longer service life.
Plastic are filled between outer strands and inner IWRC
to reduce the friction of each wire.
The fatigue resistance is increased with our Semi - IP rope
due to the fact that it is more stable than general rope
in structure.

## CHARACTERISTICS

**Increases Service Life**

The process of YoungHeung's Semi-IP core enhancement
minimizes internal core damages and prevents internal wire breaks.

**Excellent Construction Stability**

With a plastics filling system, the core movements are suppressed.
The core not receive more abuse than the out strands.

**Cushion between the layers**

The plastics filling system acts as a cushion in between strands and core.
It has a good abrasion resistance and prevents metal-to-metal contact.

**Keeps Out Water**

Keeps out water and prevents internal corrosion

**Available in right and left hand lay**

**Lower Equipment Maintenance Costs & Minimizes Downtime**

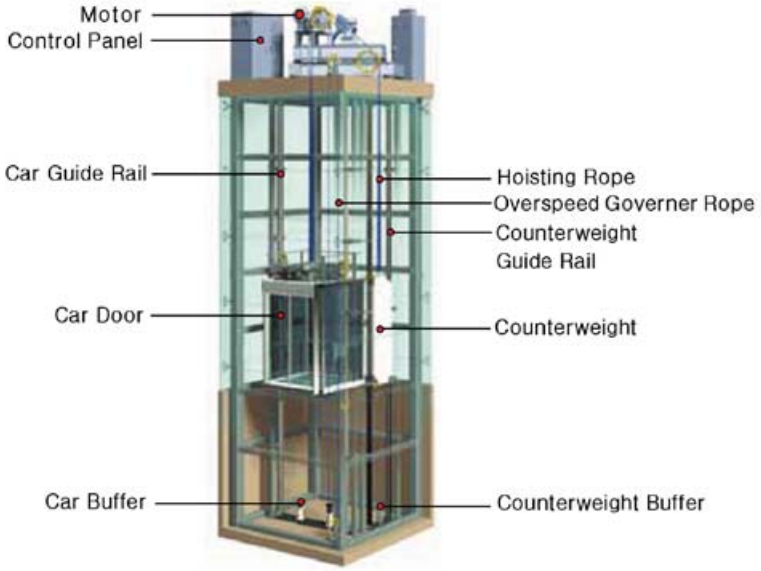
# ELEVATOR WIRE ROPE

Our Elevator rope is manufactured with accumulated know-how including wire quality, core, grease, elongation with strict quality control.
We are manufacturing products of uniform quality and removing structural elongation that can easily occur during manufacturing process by performing pretension at the latest equipment.

## characteristics :

With superiority on good service life, low elongation, no excessive sheave wear, uniform diameter

- ▶ Use of special grease to improve anti-corrosion and anti-abrasion
- ▶ Through pretension process,
  by eliminating the gabs between strands, each strand has equal tension and rope diameter becomes uniform. easy to handle and set up by getting rid of character of rotation.




## Rope Diameter

| Dia.of Wire Rope (mm) | Permisible tolerance | | | |
|---|---|---|---|---|
| | Fibre cored | | Steel cored | |
| | No load | 10% of Fmin | No load | 10% of Fmin |
| up to 10 | max. 6% | min. 0% | max. 3% | min. -1% |
| greater than to 10 | max. 5% | min. 0% | max. 2% | min. -1% |

## Maintenance

The rope should be replaced if the rope diameter is reduced by more than 6 percent based on a rope nominal diameter.

# ELEVATOR WIRE ROPE

| 8 x 19(S)+FC, 8 x 19(W)+FC, 8 x 25(FI)+FC | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dia.of Wire Rope | | Breaking Load | | | | | | | Approx.Weight | | |
| | | EN 12385(KN) | | FS(RR-W-410)(Lb) | | JIS G 3525 (KN) | | | EN | FS | JIS |
| (mm) | (in.) | Grade 1370/1770 | Grade 1570 | Traction Steel | Extra High Traction | Grade E | Grade A | Grade B | (kg/m) | (Lb/ft) | (kg/m) |
| 8 | 5/16 | 28.1 | 29.4 | 5,600 | 6,900 | 26.0 | 30.8 | 32.8 | 0.218 | 0.14 | 0.220 |
| 9 | | 35.6 | 37.3 | | | 32.9 | 39.0 | 41.5 | 0.275 | | 0.278 |
| | 3/8 | | | 8,200 | 9,900 | | | | | 0.20 | |
| 10 | | 44.0 | 46.0 | | | 40.6 | 48.1 | 51.3 | 0.340 | | 0.343 |
| 11 | 7/16 | 53.2 | 55.7 | 11,000 | 13,500 | 51.0 | 60.3 | 64.3 | 0.411 | 0.28 | 0.430 |
| 12 | | 63.3 | 66.2 | | | 58.5 | 69.2 | 73.8 | 0.490 | | 0.494 |
| 13 | 1/2 | 74.3 | 77.7 | 14,500 | 17,500 | 68.7 | 81.2 | 86.6 | 0.575 | 0.36 | 0.579 |
| 14 | 9/16 | 86.1 | 90.2 | 18,500 | 22,100 | 79.6 | 94.3 | 100 | 0.666 | 0.46 | 0.672 |
| 16 | 5/8 | 113 | 118 | 23,000 | 27,200 | 104 | 123 | 131 | 0.870 | 0.57 | 0.878 |
| 18 | | 142 | 149 | | | 132 | 156 | 166 | 1.10 | | 1.11 |
| 19 | 3/4 | 159 | 166 | 32,000 | 38,900 | 147 | 174 | 185 | 1.23 | 0.82 | 1.24 |
| 20 | 13/16 | 176 | 184 | 37,000 | 46,000 | 162 | 192 | 205 | 1.36 | 0.96 | 1.37 |

| Dia.of Wire Rope (mm) | 8 x 19(S)+IWRC, 8 x 19(W)+IWRC, 8 x 25(FI)+IWRC | | | | |
|---|---|---|---|---|---|
| | EN 12385 Breaking Load(KN) | | | | Approx. Weight (kg/m) |
| | Grade 1370/1770 | Grade 1570/1770 | Grade 1570 | Grade 1770 | |
| 8 | 35.8 | 38.0 | 35.8 | 40.3 | 0.260 |
| 9 | 45.3 | 48.2 | 45.3 | 51.0 | 0.330 |
| 10 | 55.9 | 59.5 | 55.9 | 63.0 | 0.407 |
| 11 | 67.6 | 71.9 | 67.6 | 76.2 | 0.492 |
| 12 | 80.5 | 85.6 | 80.5 | 90.7 | 0.586 |
| 13 | 94.5 | 100 | 94.5 | 106 | 0.687 |
| 14 | 110 | 117 | 110 | 124 | 0.798 |
| 16 | 143 | 152 | 143 | 161 | 1.04 |
| 18 | 181 | 193 | 181 | 204 | 1.32 |
| 19 | 202 | 215 | 202 | 227 | 1.47 |
| 20 | 224 | 238 | 224 | 252 | 1.63 |

| 6 X 19(S)+FC, 6 X 19(W)+FC, 6 X 25(FI)+FC | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dia.of Wire Rope | | Breaking Load | | | | | | | | Approx.Weight | | |
| | | EN 12385(KN) | | | FS(RR-W-410)(Lb) | | JIS G 3525 (KN) | | | EN | FS | JIS |
| (mm) | (in.) | Grade 1370/1770 | Grade 1570 | Grade 1770 | Traction Steel | Extra High Traction | Grade E | Grade A | Grade B | (kg/m) | (Lb/ft) | (kg/m) |
| 8 | 5/16 | 31.7 | 33.2 | 37.4 | 5.600 | 8,200 | 28.6 | 34.9 | 37.2 | 0.230 | 0.16 | 0.247 |
| 9 | | 40.1 | 42.0 | 47.3 | | | 36.2 | 44.1 | 47.0 | 0.291 | | 0.312 |
| | 3/8 | | | | 8.200 | 11,600 | | | | | 0.23 | |
| 10 | | 49.5 | 51.8 | 58.4 | | | 44.7 | 54.5 | 58.1 | 0.359 | | 0.386 |
| 11 | 7/16 | 59.5 | 62.7 | 70.7 | 11,000 | 15,800 | 56.1 | 68.3 | 72.8 | 0.434 | 0.31 | 0.484 |
| 12 | | 71.3 | 74.6 | 84.1 | | | 64.4 | 78.4 | 83.6 | 0.517 | | 0.556 |
| 13 | 1/12 | 83.7 | 87.6 | 98.7 | 14,500 | 20,400 | 75.6 | 92.0 | 98.1 | 0.607 | 0.40 | 0.652 |
| 14 | 9/16 | 97 | 102 | 114 | 18,500 | 25,800 | 87.7 | 107 | 114 | 0.704 | 0.51 | 0.756 |
| 16 | 5/8 | 127 | 133 | 150 | 23,000 | 31,600 | 115 | 139 | 149 | 0.919 | 0.63 | 0.988 |
| 18 | | 160 | 168 | 189 | | | 145 | 176 | 188 | 1.16 | | 1.25 |
| 19 | 3/4 | 179 | 187 | 211 | 32,000 | 45,200 | 162 | 196 | 209 | 1.30 | 0.90 | 1.39 |
| 20 | 13/16 | 198 | 207 | 234 | 37,000 | 53,000 | 179 | 218 | 232 | 1.44 | 1.06 | 1.54 |

# CABLE LAID ROPE

| 7 X 7 X 7 | | | | |
|---|---|---|---|---|
| Dia. of Wire Rope (in.) | Breaking Load (Lb) | | | Approx. Weight (Lb/ft) |
| | Grade A | Grade B | Grade C | |
| 5/16 | 6,490 | 7,080 | 7,670 | 0.135 |
| 3/8 | 9,350 | 10,200 | 11,100 | 0.195 |
| 7/16 | 12,900 | 14,100 | 15,200 | 0.273 |
| 1/2 | 16,400 | 17,900 | 19,400 | 0.346 |
| 9/16 | 21,100 | 23,000 | 24,900 | 0.446 |
| 5/8 | 26,500 | 28,900 | 31,300 | 0.558 |
| 3/4 | 37,300 | 40,700 | 44,100 | 0.786 |
| 7/8 | 51,800 | 56,500 | 61,200 | 1.093 |
| 1 | 66,600 | 72,600 | 78,700 | 1.405 |
| 1-1/8 | 84,200 | 91,900 | 99,500 | 1.781 |
| 1-1/4 | 105,600 | 115,200 | 124,800 | 2.230 |
| 1-5/16 | 119,000 | 129,800 | 140,600 | 2.517 |
| 1-3/8 | 126,300 | 137,800 | 149,300 | 2.668 |
| 1-7/16 | 133,600 | 145,700 | 157,900 | 2.822 |
| 1-1/2 | 148,800 | 162,300 | 175,900 | 3.145 |
| 1-9/16 | 164,900 | 179,900 | 194,900 | 3.484 |

| 7 X 7 X 19 | | | | |
|---|---|---|---|---|
| Dia. of Wire Rope (in.) | Breaking Load (Lb) | | | Approx. Weight (Lb/ft) |
| | Grade A | Grade B | Grade C | |
| 3/8 | 9,100 | 9,900 | 10,800 | 0.195 |
| 7/16 | 12,700 | 13,900 | 15,000 | 0.270 |
| 1/2 | 16,100 | 17,600 | 19,100 | 0.341 |
| 9/16 | 20,700 | 22,600 | 24,500 | 0.440 |
| 5/8 | 26,000 | 28,400 | 30,700 | 0.550 |
| 3/4 | 36,600 | 39,900 | 43,300 | 0.776 |
| 7/8 | 50,700 | 55,300 | 59,900 | 1.079 |
| 1 | 65,300 | 71,200 | 77,200 | 1.387 |
| 1-1/8 | 82,900 | 90,400 | 98,000 | 1.759 |
| 1-1/4 | 103,600 | 113,000 | 122,400 | 2.202 |
| 1-5/16 | 117,100 | 127,700 | 138,400 | 2.486 |
| 1-3/8 | 124,100 | 135,400 | 146,700 | 2.643 |
| 1-7/16 | 131,200 | 143,100 | 155,100 | 2.787 |
| 1-1/2 | 146,200 | 159,500 | 172,800 | 3.105 |
| 1-9/16 | 162,000 | 176,700 | 191,500 | 3.440 |

# GALVANIZED STEEL WIRE STRAND

## PHYSICAL PROPERTIES
## A.S.T.M. A475

| Nominal Diameter of the Strand (in.) | Number of Wires in Strand | Nominal Diameter of Coated Wires in Strand (in.) | Approxi-mate Weight of strand per1000ft (Lb) | Minimum Breaking Load of Strand(Lb) | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Utilities Grade | Common Grade | Siemens Martin Grade | High Strength Grade | Extra High Strength Grade |
| 3/16 | 7 | 0.062 | 73 | | 1,150 | 1,900 | 2,850 | 3,990 |
| 3/16 | 7 | 0.065 | 80 | 2,400(1) | | | | |
| 7/32 | 7 | 0.072 | 98 | | 1,540 | 2,560 | 3,850 | 5,400 |
| 1/4 | 3 | 0.120 | 117 | 3,150(2) | | | | |
| 1/4 | 3 | 0.120 | 117 | 4,500(3) | | | | |
| 1/4 | 7 | 0.080 | 121 | | 1,900 | 3,150 | 4,750 | 6,650 |
| 9/32 | 7 | 0.093 | 164 | 4,600(1) | 2,570 | 4,250 | 6,400 | 8,950 |
| 5/16 | 3 | 0.145 | 171 | 6,500(3) | | | | |
| 5/16 | 7 | 0.104 | 205 | | 3,200 | 5,350 | 8,000 | 11,200 |
| 5/16 | 7 | 0.109 | 225 | 6,000(1) | | | | |
| 3/8 | 3 | 0.165 | 220 | 8,500(3) | | | | |
| 3/8 | 7 | 0.120 | 273 | 11,500(4) | 4,250 | 6,950 | 10,800 | 15,400 |
| 7/16 | 7 | 0.145 | 399 | 18,000(4) | 5,700 | 9,350 | 14,500 | 20,800 |
| 1/2 | 7 | 0.165 | 517 | 25,000(4) | 7,400 | 12,100 | 18,800 | 26,900 |

## JIS G 3537

| Nominal Diameter of the Strand (in.) | No. of Wires. In Strand/ Dia. of Standard Wires (mm) | Nominal Cross Section Area ($mm^2$) | Minimum Breaking Load of Strand(kN) | | | Approx. Weight (kg/m) |
|---|---|---|---|---|---|---|
| | | | Grade 1 | Grade 2 | Grade 3 | |
| 3.0 | 7/1.00 | 5.50 | 6.19 | 4.48 | 3.47 | 0.0435 |
| 3.6 | 7/1.20 | 7.92 | 8.90 | 6.44 | 4.99 | 0.0627 |
| 4.2 | 7/1.40 | 10.8 | 12.2 | 8.78 | 6.83 | 0.0853 |
| 4.8 | 7/1.60 | 14.1 | 15.9 | 11.5 | 8.90 | 0.111 |
| 5.4 | 7/1.80 | 17.1 | 20.1 | 14.4 | 11.3 | 0.141 |
| 6.0 | 7/2.00 | 22.0 | 24.8 | 17.8 | 13.9 | 0.174 |
| 6.9 | 7/2.30 | 29.1 | 32.8 | 23.6 | 18.3 | 0.230 |
| 7.8 | 7/2.60 | 37.2 | 42.0 | 30.2 | 23.5 | 0.294 |
| 8.7 | 7/2.90 | 46.2 | 52.2 | 37.6 | 29.2 | 0.366 |
| 9.6 | 7/3.20 | 56.3 | 63.7 | 45.7 | 35.6 | 0.446 |
| 10.5 | 7/3.50 | 67.3 | 75.8 | 54.7 | 42.5 | 0.533 |
| 11.4 | 7/3.80 | 79.3 | 89.8 | 64.4 | 50.1 | 0.628 |
| 12.0 | 7/4.00 | 88.0 | 99.1 | 71.4 | 55.6 | 0.696 |
| 12.9 | 7/4.30 | 102 | 115 | 82.8 | 64.4 | 0.805 |

# JIS G 3521
# HARD DRAWN STEEL WIRE

| Diameter of Wire (mm) | Tensile Strength(N/mm²) | | |
|---|---|---|---|
| | SW-A | SW-B | SW-C |
| 0.08 | 2110~2450 | 2450~2790 | 2790~3140 |
| 0.09 | 2060~2400 | 2400~2750 | 2750~3090 |
| 0.10 | 2010~2350 | 2350~2700 | 2700~3040 |
| 0.12 | 1960~2300 | 2300~2650 | 2650~2990 |
| 0.14 | 1960~2260 | 2260~2600 | 2600~2940 |
| 0.16 | 1910~2210 | 2210~2550 | 2550~2890 |
| 0.18 | 1910~2210 | 2210~2500 | 2500V2840 |
| 0.20 | 1910~2210 | 2210~2500 | 2500~2790 |
| 0.23 | 1860~2160 | 2160~2450 | 2450~2750 |
| 0.26 | 1810~2110 | 2110~2400 | 2400~2700 |
| 0.29 | 1770~2060 | 2060~2350 | 2350~2650 |
| 0.32 | 1720~2010 | 2010~2300 | 2300~2600 |
| 0.35 | 1720~2010 | 2010~2300 | 2300~2600 |
| 0.40 | 1670~1960 | 1960~2260 | 2260~2550 |
| 0.45 | 1620~1910 | 1910~2210 | 2210~2500 |
| 0.50 | 1620~1910 | 1910~2210 | 2210~2500 |
| 0.55 | 1570~1860 | 1860~2160 | 2160V2450 |
| 0.60 | 1570~1810 | 1810~2110 | 2110~2400 |
| 0.65 | 1570~1810 | 1810~2110 | 2110~2400 |
| 0.70 | 1520~1770 | 1770~2060 | 2060~2350 |
| 0.80 | 1520~1770 | 1770~2010 | 2010~2300 |
| 0.90 | 1520~1770 | 1770~2010 | 2010~2260 |
| 1.00 | 1470~1720 | 1720~1960 | 1960~2210 |
| 1.20 | 1420~1670 | 1670~1910 | 1910~2160 |
| 1.40 | 1370~1620 | 1620~1860 | 1860~2110 |
| 1.60 | 1320~1570 | 1570~1810 | 1810~2060 |
| 1.80 | 1270~1520 | 1520~1770 | 1770~2010 |
| 2.00 | 1270~1470 | 1470~1720 | 1720~1960 |
| 2.30 | 1230~1420 | 1420~1670 | 1670~1910 |
| 2.60 | 1230~1420 | 1420~1670 | 1670~1910 |
| 2.90 | 1180~1370 | 1370~1620 | 1620~1860 |
| 3.20 | 1180~1370 | 1370~1570 | 1570~1810 |
| 3.50 | 1180~1370 | 1370~1570 | 1570~1770 |
| 4.00 | 1180~1370 | 1370~1570 | 1570~1770 |
| 4.50 | 1130~1320 | 1320~1520 | 1520~1720 |
| 5.00 | 1130~1320 | 1320~1520 | 1520~1720 |
| 5.50 | 1080~1270 | 1270~1470 | 1470~1670 |
| 6.00 | 1030~1230 | 1230~1420 | 1420~1620 |
| 6.50 | 1030~1230 | 1230~1420 | 1420~1620 |
| 7.00 | 980~1180 | 1180~1370 | 1370~1570 |
| 8.00 | 980~1180 | 1180~1370 | 1370~1570 |
| 9.00 | 930~1130 | 1130~1320 | 1320~1520 |
| 10.00 | 930~1130 | 1130~1320 | 1320~1520 |
| 11.00 | – | 1080~1270 | 1270~1470 |
| 12.00 | – | 1080~1270 | 1270~1470 |
| 13.00 | – | 1030~1230 | 1230~1420 |

Remark : For the wire whose diameter is an intermediate between those given in the above table, the value specified for the nearest larger diameter shall applied.

ASTM, BS, DIN AND BUYER'S SPECIFICATION ARE ALSO AVAILABLE

# JIS G 3522 PIANO WIRE

| Diameter of Wire (mm) | Tensile Strength(N/mm²) | | |
|---|---|---|---|
| | SWP-A | SWP-B | SWP-V |
| 0.08 | 2890~3190 | 3190~3480 | – |
| 0.09 | 2840~3140 | 3140~3430 | – |
| 0.10 | 2790~3090 | 3090~3380 | – |
| 0.12 | 2750~3040 | 3040~3330 | – |
| 0.14 | 2700~2990 | 2990~3290 | – |
| 0.16 | 2650~2940 | 2940~3240 | – |
| 0.18 | 2600~2890 | 2890~3190 | – |
| 0.20 | 2600~2840 | 2840~3090 | – |
| 0.23 | 2550~2790 | 2790~3040 | – |
| 0.26 | 2500~2750 | 2750~2990 | – |
| 0.29 | 2450~2700 | 2700~2940 | – |
| 0.32 | 2400~2650 | 2650~2890 | – |
| 0.35 | 2400~2650 | 2650~2890 | – |
| 0.40 | 2350~2600 | 2600~2840 | – |
| 0.45 | 2300~2550 | 2550~2790 | – |
| 0.50 | 2300~2550 | 2550~2790 | – |
| 0.55 | 2260~2500 | 2500~2750 | – |
| 0.60 | 2210~2450 | 2450~2700 | – |
| 0.65 | 2210~2450 | 2450~2700 | – |
| 0.70 | 2160~2400 | 2400~2650 | – |
| 0.80 | 2110~2350 | 2350~2600 | – |
| 0.90 | 2110~2300 | 2300~2500 | – |
| 1.00 | 2060~2260 | 2260~2450 | 2010~2210 |
| 1.20 | 2010~2210 | 2210~2400 | 1960~2160 |
| 1.40 | 1960~2160 | 2160~2350 | 1910~2110 |
| 1.60 | 1910~2110 | 2110~2300 | 1860~2060 |
| 1.80 | 1860~2060 | 2060~2260 | 1810~2010 |
| 2.00 | 1810~2010 | 2010~2210 | 1770~1910 |
| 2.30 | 1770~1960 | 1960~2160 | 1720~1860 |
| 2.60 | 1770~1960 | 1960~2160 | 1720~1860 |
| 2.90 | 1720~1910 | 1910~2110 | 1720~1860 |
| 3.20 | 1670~1860 | 1860~2060 | 1670~1810 |
| 3.50 | 1670~1810 | 1810~1960 | 1670~1810 |
| 4.00 | 1670~1810 | 1810~1960 | 1670~1810 |
| 4.50 | 1620~1770 | 1770~1910 | 1620~1770 |
| 5.00 | 1620~1770 | 1770~1910 | 1620~1770 |
| 5.50 | 1570~1710 | 1710~1860 | 1570~1720 |
| 6.00 | 1520~1670 | 1670~1810 | 1520~1670 |
| 6.50 | 1520~1670 | 1670~1810 | – |
| 7.00 | 1470~1620 | 1620~1770 | – |
| 8.00 | 1470~1620 | – | – |
| 9.00 | 1420~1570 | – | – |
| 10.00 | 1420~1570 | – | – |

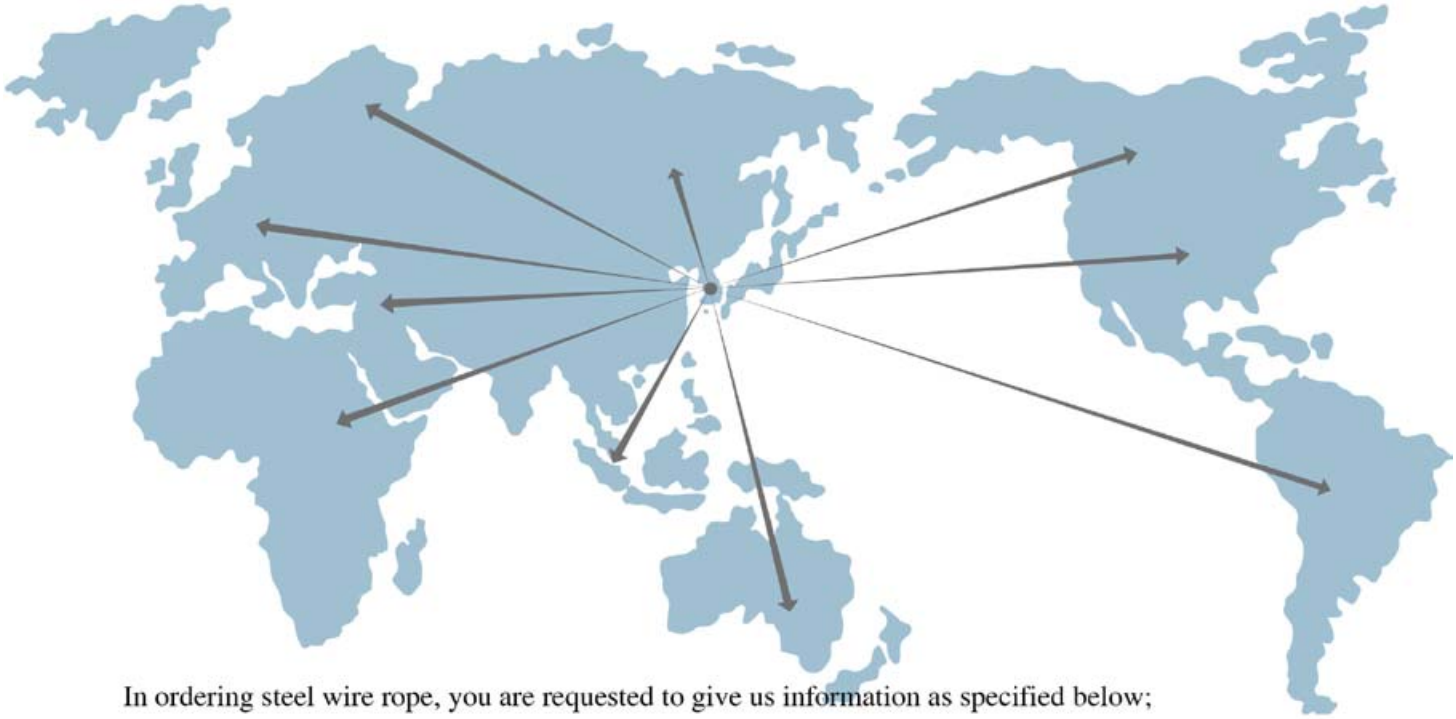
Remark : For the wire whose diameter is an intermediate between those given in the above table, the value specified for the nearest larger diameter shall applied.

ASTM, BS, DIN AND BUYER'S SPECIFICATION ARE ALSO AVAILABLE

# STANDARD LUBRICATION CHART FOR WIRE ROPE

| LUBE TYPE | LUBE MATERIAL | APPLICATION | APPEARANCE | USE FOR GENERAL PURPOSE |
|---|---|---|---|---|
| DRY-S | RUST PREVENT OIL (LIGHT OIL) | VERY LIGHT APPLICATION VERY TIGHTLY WIPED | NON DRY TYPE FILM AND BRIGHT, COMPLETELY NO GREASE AND NON TACKY | GALV A/C, INNER CABLE GALV STEEL WIRE, HARD DRAWN STEEL WIRE, GALV WIRE ROPE ETC. |
| DRY | DITTO | DITTO | DRY TYPE FILM & BRIGHT, COMPLETELY NO GREASE AND NON TACKY | GALV A/C, INNER CABLE GALV STEEL WIRE ROPE ETC. |
| A-1 | PETROLATUM BASE GREASE | VERY LIGHT DUTY. TIGHTLY WIPED | VERY LIGHT GREASE | GALV/UNGALV WIRE ROPES |
| A-2 | DITTO | LIGHT DUTY, LOOSELY WIPED | LIGHT GREASE | DITTO |
| A-3 | DITTO | NOT WIPED DOUBLE GREASED INSIDE & OUTSIDE | HEAVY GREASE | DITTO |
| B | PETROLATUM 60% ASPHALTUM 40% MIXED GREASE | MEDIUM DUTY, TIGHTLY WIPED | DARK GREASE SLIGHTLY WET | DITTO |
| C | ASPHALTUM BASE GREASE | HEAVY DUTY, LOOSELY WIPED | BLACK GREASE AND WET APPEARANCE | DITTO |
| D | DITTO | VERY HEAVY DUTY, NOT WIPED, DOUBLE GREASED INSIDE & OUTSIDE | VERY BLACK, WET AND TACKY | DITTO |

# HOW TO ORDER STEEL WIRE ROPE



In ordering steel wire rope, you are requested to give us information as specified below;

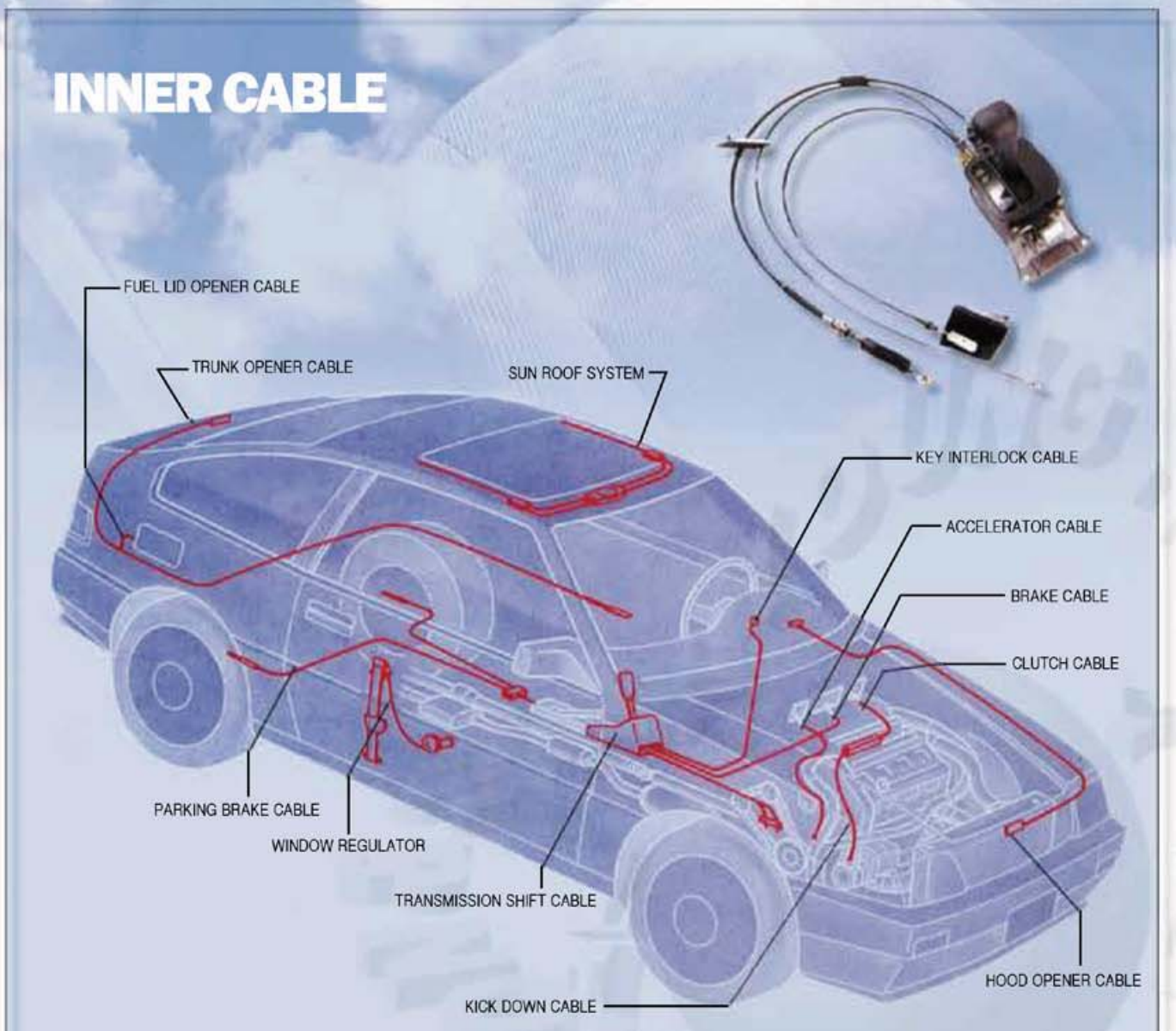
| | |
|---|---|
| **1. PURPOSE** | : For which the rope will be used. |
| **2. SIZE** | : Diameter of the rope in millimeters or inches |
| **3. CONSTRUCTION** | : Number of strands, number of wires per strand, and type of strand construction. |
| **4. TYPE OF CORE** | : Fiber Core(FC), Independent Wire Rope Core(IWRC) or Independent Wire Strand Core(IWSC). |
| **5. LAY** | : Right Regular Lay, Left Regular Lay. Right Lang Lay, or Left Lang Lay. |
| **6. FABRICATION** | : Preformed or not. |
| **7. COATING** | : Bright(Black, Ungalvanized)or Galvanized. |
| **8. GRADE OF WIRES** | : Tensile Strength of Wires |
| **9. BREAKING LOAD** | : Minimum or Calculated Breaking Load in tons or pounds. |
| **10. LUBRICATION** | : Whether lubricant is desired or not. Any required Lubricant. |
| **11. LENGTH** | : Length of Wire Rope |
| **12. PACKING** | : In coils wrapped with oil paper and hessian(or P.P.)cloth, or on wooden reels. |
| **13. QUANTITY** | : By number of coils or reels, by length or weight. |
| **14. SPECIFICATION** | : Any recognized specification, if necessary. |
| **15. CERTIFICATE** | : Mill Sheet and/or a third party's inspection, if needed. |
| **16. REMARKS** | : Shipping Marks and any other special requirements. |

# INNER CABLE

## GAC & INNER CABLE

### INNER CABLE






麦记五金机械（上海）有限公司
王亮 18221280210

# GALVANIZED AIRCRAFT CABLE

| Diameter | | 7 x 7 | | | 7 x 19 | | | 1x 19 | |
|---|---|---|---|---|---|---|---|---|---|
| | | GAC | SSA/C | GAC & SSA/C | GAC | SSA/C | GAC & SSA/C | GAC & SSA/C | |
| (mm) | (in.) | MinBreaking Load (kg) | MinBreaking Load (kg) | Weight (kg/100m) | Min Breaking Load (kg) | Min Breaking Load (kg) | Weight (kg/100m) | Min Breaking Load (kg) | Weight (kg/100m) |
| 0.79 | 1/32 | – | – | – | – | – | – | 84 | 0.32 |
| 1.19 | 3/64 | – | – | – | – | – | – | 170 | 0.82 |
| 1.59 | 1/16 | 218 | 218 | 1.12 | – | – | – | 227 | 1.26 |
| 1.98 | 5/64 | 295 | 295 | 1.64 | – | – | – | 363 | 2.08 |
| 2.38 | 3/32 | 417 | 417 | 2.38 | 454 | 417 | 2.59 | 544 | 2.98 |
| 2.78 | 7/64 | 572 | 572 | 3.27 | 635 | 572 | 3.27 | 726 | 4.02 |
| 3.18 | 1/8 | 771 | 771 | 4.17 | 907 | 798 | 4.32 | 953 | 5.21 |
| 3.57 | 9/64 | 953 | 953 | 5.27 | 1043 | 953 | 5.42 | 1279 | 6.07 |
| 3.97 | 5/32 | 1179 | 1089 | 6.40 | 1270 | 1089 | 6.70 | 1497 | 8.19 |
| 4.76 | 3/16 | 1678 | 1678 | 9.23 | 1905 | 1678 | 9.67 | 2132 | 11.50 |
| 5.56 | 7/32 | 2177 | 2177 | 12.34 | 2540 | 2268 | 12.80 | 2858 | 15.20 |
| 6.35 | 1/4 | 2767 | 2767 | 15.76 | 3175 | 2903 | 16.40 | 3720 | 20.10 |
| 7.14 | 9/32 | 3447 | 3447 | 19.93 | 3629 | 3538 | 20.70 | 4672 | 25.30 |
| 7.94 | 5/16 | 4173 | 4082 | 24.84 | 4445 | 4082 | 25.70 | 5670 | 31.30 |
| 9.53 | 3/8 | 5942 | 5443 | 35.10 | 6532 | 5443 | 36.20 | 7938 | 44.80 |

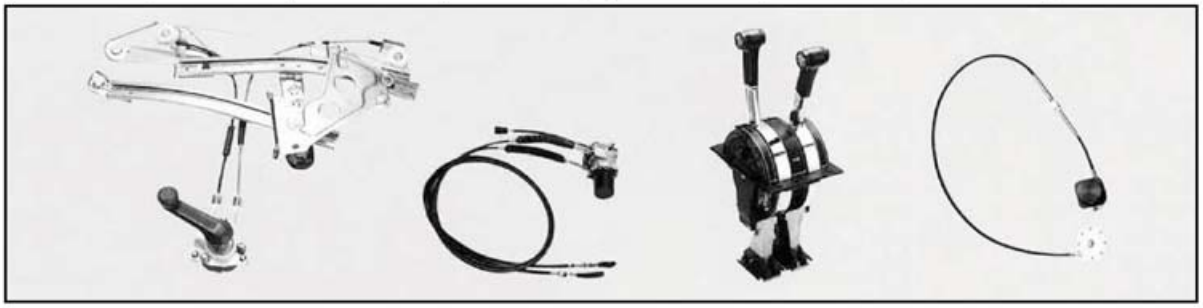
# P.V.C COATED CABLE

| Construc-tion | Diameter (mm) | | Min Breaking Load | Weight | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Inside Dia. | Outside Dia. | | CABLE | | P.C.V | | Total Weight | |
| | | | kg | LP/100ft | kg/100m | Lb/100ft | kg/100m | Lb/100ft | kg/100m |
| 7 x 7 | 1.59 | 2.38 | 218 | 0.75 | 1.12 | 0.23 | 0.34 | 0.98 | 1.46 |
| | 1.59 | 3.18 | 218 | 0.75 | 1.12 | 0.51 | 0.76 | 1.26 | 1.88 |
| | 1.59 | 4.76 | 218 | 0.75 | 1.12 | 1.31 | 1.95 | 2.06 | 3.07 |
| | 2.38 | 3.18 | 417 | 1.60 | 2.38 | 0.35 | 0.52 | 1.95 | 2.90 |
| | 2.38 | 3.97 | 417 | 1.60 | 2.38 | 0.71 | 1.06 | 2.31 | 3.44 |
| | 2.38 | 4.76 | 417 | 1.60 | 2.38 | 1.15 | 1.71 | 2.75 | 4.09 |
| | 3.18 | 4.76 | 771 | 2.80 | 4.17 | 0.92 | 1.37 | 3.72 | 5.54 |
| | 3.18 | 6.35 | 771 | 2.80 | 4.17 | 2.04 | 3.04 | 4.84 | 7.21 |
| | 4.76 | 7.94 | 1678 | 6.20 | 9.23 | 2.87 | 4.27 | 9.07 | 13.5 |
| 7 x 19 | 3.18 | 4.76 | 907 | 2.90 | 4.32 | 0.92 | 1.37 | 3.82 | 5.69 |
| | 3.18 | 5.56 | 907 | 2.90 | 4.32 | 1.45 | 2.15 | 4.35 | 6.47 |
| | 3.18 | 6.35 | 907 | 2.90 | 4.32 | 2.05 | 3.04 | 4.95 | 7.36 |
| | 3.97 | 5.56 | 1270 | 4.50 | 6.70 | 1.16 | 1.72 | 5.66 | 8.42 |
| | 4.76 | 6.35 | 1905 | 6.50 | 9.67 | 1.43 | 2.13 | 7.93 | 11.8 |
| | 4.76 | 7.94 | 1905 | 6.50 | 9.67 | 2.84 | 4.23 | 9.43 | 13.9 |
| | 6.35 | 7.94 | 3175 | 11.02 | 16.4 | 1.98 | 2.90 | 13.0 | 19.3 |
| | 6.35 | 9.53 | 3175 | 11.02 | 16.4 | 3.98 | 5.50 | 15.0 | 21.90 |
| | 7.94 | 10.32 | 4445 | 17.3 | 25.7 | 3.82 | 5.28 | 21.12 | 30.98 |
| | 7.94 | 11.1 | 4445 | 17.3 | 25.7 | 4.96 | 6.85 | 22.26 | 32.55 |
| | 9.53 | 11.1 | 6532 | 24.3 | 36.2 | 3.44 | 4.76 | 27.74 | 40.96 |
| | 9.53 | 11.9 | 6532 | 24.3 | 36.2 | 4.70 | 6.49 | 29.0 | 42.69 |

# INNER CABLE

| Construction | Diameter(mm) | Min. Breaking Load (kg) | Weight (kg/1000m) |
|---|---|---|---|
| 1 x 3 | 0.20 | 4.5 | 0.19 |
| | 0.24 | 6.5 | 0.27 |
| | 0.30 | 10 | 0.42 |
| | 0.34 | 13 | 0.54 |
| | 0.40 | 18 | 0.76 |
| | 0.52 | 28 | 1.27 |
| 1 x 7 | 0.30 | 10 | 0.44 |
| | 0.36 | 15 | 0.64 |
| | 0.40 | 18 | 0.75 |
| | 0.45 | 23 | 1.0 |
| | 0.50 | 30 | 1.25 |
| | 0.60 | 41 | 1.8 |
| | 0.75 | 60 | 2.8 |
| | 0.80 | 78 | 3.14 |
| | 0.90 | 90 | 4.0 |
| | 1.0 | 110 | 4.8 |
| | 1.2 | 150 | 7.0 |
| | 1.5 | 230 | 11.6 |
| 1 x 12 | 1.0 | 105 | 4.9 |
| | 1.2 | 145 | 6.9 |
| | 1.5 | 230 | 10.8 |
| 1 x 13 | 1.2 | 136 | 7.9 |
| | 1.6 | 242 | 13.9 |
| | 2.3 | 590 | 27.2 |
| | 3.2 | 719 | 51.3 |
| | 3.4 | 812 | 62.4 |
| 1 x 19 | 0.5 | 29 | 1.25 |
| | 0.6 | 40 | 1.79 |
| | 0.7 | 55 | 2.44 |
| | 0.8 | 72 | 3.20 |
| | 0.9 | 90 | 4.03 |
| | 1.0 | 110 | 4.98 |
| | 1.2 | 150 | 8.20 |
| | 1.5 | 250 | 11.6 |
| | 1.6 | 280 | 12.8 |
| | 1.8 | 340 | 16.0 |
| | 2.0 | 430 | 21.2 |
| | 2.38 | 560 | 29.8 |
| | 2.5 | 640 | 32.9 |
| | 3.0 | 850 | 46.9 |
| | 3.5 | 1100 | 61.8 |
| | 4.0 | 1500 | 83.2 |
| 1 x 27 | 1.2 | 160 | 7.0 |
| | 1.5 | 230 | 11.0 |
| | 2.0 | 400 | 19.2 |
| | 2.5 | 640 | 30.0 |
| | 3.0 | 850 | 43.2 |
| | 3.5 | 1100 | 58.8 |

| Construction | Diameter(mm) | Min. Breaking Load (kg) | Weight (kg/1000m) |
|---|---|---|---|
| 1 x 37 | 4.0 | 1600 | 76.4 |
| | 4.8 | 1790 | 112.0 |
| 3 x 7 | 0.60 | 30 | 1.36 |
| | 0.79 | 50 | 2.38 |
| | 0.90 | 65 | 3.07 |
| | 1.0 | 83 | 3.9 |
| | 1.2 | 110 | 5.45 |
| | 1.3 | 130 | 6.58 |
| | 1.5 | 170 | 8.5 |
| 7 x 7 | 0.90 | 69 | 3.26 |
| | 1.0 | 82 | 3.93 |
| | 1.2 | 120 | 6.25 |
| | 1.5 | 180 | 9.9 |
| | 1.59 | 218 | 11.2 |
| | 2.0 | 310 | 16.7 |
| | 2.38 | 417 | 23.8 |
| | 2.5 | 480 | 26.5 |
| | 3.0 | 700 | 37.7 |
| | 3.1 | 740 | 40.2 |
| | 3.2 | 776 | 42.0 |
| | 3.5 | 900 | 50.8 |
| | 4.0 | 1150 | 65.1 |
| | 5.0 | 1700 | 102 |
| | 6.0 | 2300 | 143 |
| 7 x 19 | 1.5 | 180 | 9.93 |
| | 1.59 | 200 | 11.16 |
| | 1.8 | 256 | 14.8 |
| | 2.0 | 300 | 18.3 |
| | 2.38 | 430 | 25.9 |
| | 2.5 | 475 | 27.5 |
| | 3.0 | 700 | 38.6 |
| | 3.18 | 907 | 43.2 |
| | 3.5 | 1099 | 52.9 |
| | 4.0 | 1270 | 68.2 |
| | 4.76 | 1910 | 96.7 |
| | 5.0 | 2107 | 106 |
| | 5.56 | 2540 | 128 |
| | 6.0 | 2958 | 148 |
| | 6.35 | 3180 | 164 |
| | 8.0 | 4450 | 257 |
| | 9.0 | 5632 | 330 |
| | 9.35 | 6530 | 362 |
| 8 x 7+ (1 x 19) | 1.5 | 250 | 10.4 |
| | 1.8 | 360 | 15.1 |
| | 2.0 | 420 | 18.7 |



# LOW RELAXATION PRESTRESSED CONCRETE

Drawing Process

Stranding Process

Pulling & Heat Treatment Process

Take-up Process

## *QUALITY CONTROL*

Dead Straight

Good preforming of strand

Higher Breaking & Yield Strength

Low Relaxation at elevated temperatures

LOW RELAXATION PRESTRESSED CONCRETE

## USE

*PRE-TENSION* Pile &Pole, Concrete Slab, Prestressed Concrete Pipe & Tubes Concrete Railway Sleepers,

*POST-TENSION* Prestressed Concrete Structures, Roofing Structures, Concrete Storage Tank, Concrete Bridges or Viaducts, Concrete Anchor, Atomic Furnace

## What is Low Relaxation?

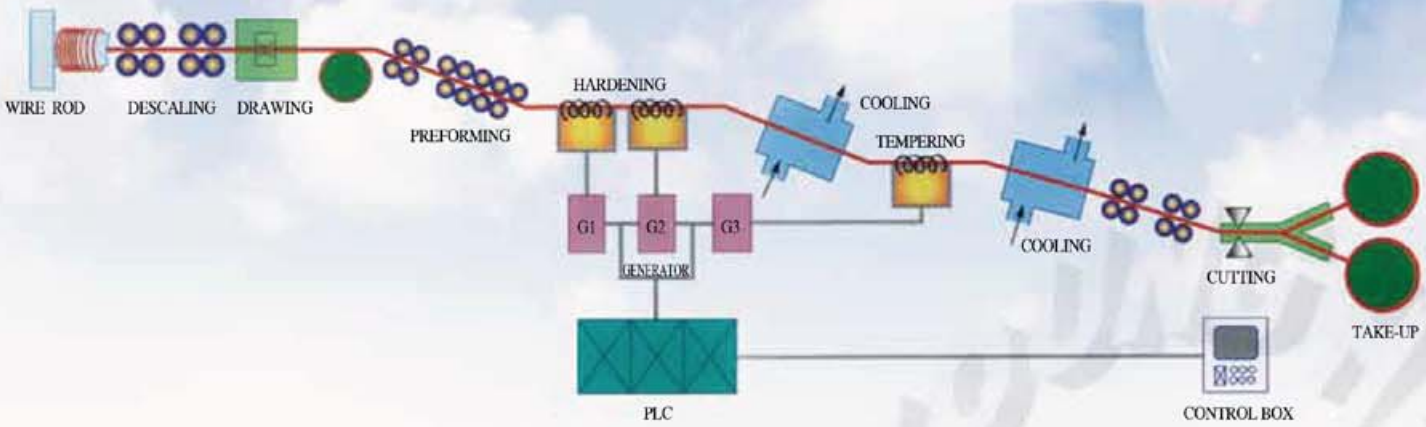
L/R-PC strand is used in order to reinforce the concrete structure.
Any prestressing steel, either wire strand and bar, which are stressed and embedded in concrete lose the applied stress exponential function with time.
Relaxation is indicated percentage which is degree of stress loss as P.C strand is pulled.
This rate is the most important because it is used in the design of prestressed concrete structures.
However, stress loss can be reduced due to relaxation.
An additional advantage can be anticipated when L/R-PC strand is subject to the stabilization by high frequency heating during the tension process.

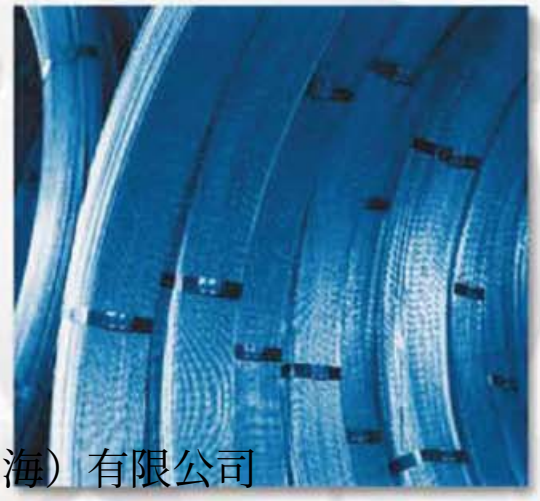
# LOW RELAXATION PRESTRESSED CONCRETE

| Standard | | Nominal Dia. | | Tolerance of Dia. | | Unit/ Weight | | Breaking Load(Min) | | Minimum Load at(0.2%) Extension | | Elongation% (Min)in24 inches | Pitch | Relaxation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Grade | in. | mm | in. | mm | Lb/ 1000ft | kg/ km | Lb | kg | Lb | kg | | | |
| ASTM A 416-80 | 250 | 1/4 | 6.35 | ±0.016 | ±0.41 | 122 | 182 | 9,000 | 4,080 | 7,650 | 3,470 | 3.5 | 12-16D | Max. 2.5% Per 1000 Hr (B.L*x 0.70) |
| | | 5/16 | 7.94 | ±0.016 | ±0.41 | 197 | 294 | 14,500 | 6,580 | 12,300 | 5,580 | 3.5 | 12-16D | |
| | | 3/8 | 9.53 | ±0.016 | ±0.41 | 272 | 405 | 20,000 | 9,070 | 17,000 | 7,710 | 3.5 | 12-16D | |
| | | 7/16 | 11.11 | ±0.016 | ±0.41 | 367 | 548 | 27,000 | 12,250 | 23,000 | 10,430 | 3.5 | 12-16D | |
| | | 1/2 | 12.70 | ±0.016 | ±0.41 | 490 | 730 | 30,600 | 16,330 | 30,600 | 13,880 | 3.5 | 12-16D | |
| | | 0.6 | 15.24 | ±0.016 | ±0.41 | 737 | 1094 | 54,000 | 24,490 | 45,900 | 20,820 | 3.5 | 12-16D | |
| | 270 | 3/8 | 9.53 | +0.026 -0.006 | +0.66 -0.15 | 290 | 432 | 23,000 | 10,430 | 19,550 | 8,870 | 3.5 | 12-16D | Max. 3.5% Per 1000 Hr (B.L*x 0.80) |
| | | 7/16 | 11.11 | +0.026 -0.006 | +0.66 -0.15 | 390 | 582 | 31,000 | 14,060 | 26,350 | 11,950 | 3.5 | 12-16D | |
| | | 1/2 | 12.70 | +0.026 -0.006 | +0.66 -0.15 | 520 | 775 | 41,300 | 18,370 | 35,100 | 15,920 | 3.5 | 12-16D | |
| | | 0.6 | 15.24 | +0.026 -0.006 | +0.66 -0.15 | 740 | 1102 | 58,600 | 26,580 | 49,800 | 22,590 | 3.5 | 12-16D | |
| BS 5896-80 | STANDARD | 3/8 | 9.3 | +0.012 -0.006 | +0.3 -0.15 | 274 | 408 | 20,680 | 9,380 | 18,120 | 8,260 | 3.5 | 12-16D | Max. 2.5% Per 1000 Hr (B.L*x 0.70) |
| | | 7/16 | 11.0 | +0.012 -0.006 | +0.3 -0.15 | 374 | 557 | 28,100 | 12,740 | 24,730 | 11,210 | 3.5 | 12-16D | |
| | | 1/2 | 12.5 | +0.016 -0.008 | +0.4 -0.2 | 490 | 730 | 36,870 | 16,720 | 32,370 | 14,680 | 3.5 | 12-16D | |
| | | 0.6 | 15.2 | +0.016 -0.008 | +0.4 -0.2 | 732 | 1090 | 52,150 | 23,650 | 45,860 | 20,800 | 3.5 | 12-16D | |
| | SUPER | 5/16 | 8.0 | +0.012 -0.006 | +0.3 -0.15 | 200 | 298 | 15,730 | 7,140 | 13,170 | 6,220 | 3.5 | 12-16D | Max. 4.5% Per 1000 Hr (B.L*x 0.80) |
| | | 3/8 | 9.6 | +0.012 -0.006 | +0.3 -0.15 | 290 | 432 | 22,930 | 10,400 | 20,230 | 9,180 | 3.5 | 12-16D | |
| | | 7/16 | 11.3 | +0.012 -0.006 | +0.3 -0.15 | 396 | 590 | 31,250 | 14,170 | 27,420 | 12,440 | 3.5 | 12-16D | |
| | | 1/2 | 12.9 | +0.016 -0.008 | +0.4 -0.2 | 527 | 785 | 41,810 | 18,970 | 36,640 | 16,620 | 3.5 | 12-16D | |
| | | 0.6 | 15.7 | +0.016 -0.008 | +0.4 -0.2 | 792 | 1180 | 59,570 | 27,020 | 52,380 | 23,760 | 3.5 | 12-16D | |
| KS D7002-95 & JIS G3536-84 | SWPC 7A (175kg/㎟) | 1/4 | 6.2 | +0.016 -0.008 | +0.4 -0.2 | 122 | 182 | 9,040 | 4,100 | 7,600 | 3,450 | 3.5 | 12-16D | Max. 2.5% Per 1000 Hr (B.L*x 0.70) |
| | | 5/16 | 7.9 | +0.016 -0.008 | +0.4 -0.2 | 196 | 293 | 14,550 | 6,600 | 12,340 | 5,600 | 3.5 | 12-16D | |
| | | 3/8 | 9.3 | +0.016 -0.008 | +0.4 -0.2 | 272 | 405 | 19,950 | 9,050 | 16,970 | 7,700 | 3.5 | 12-16D | |
| | | 7/16 | 10.8 | +0.016 -0.008 | +0.4 -0.2 | 366 | 546 | 26,890 | 12,200 | 22,390 | 10,400 | 3.5 | 12-16D | |
| | | 1/2 | 12.4 | +0.016 -0.008 | +0.4 -0.2 | 489 | 729 | 35,390 | 16,300 | 30,640 | 13,900 | 3.5 | 12-16D | |
| | | 0.6 | 15.2 | +0.016 -0.008 | +0.4 -0.2 | 739 | 1101 | 54,010 | 24,500 | 45,850 | 20,800 | 3.5 | 12-16D | |
| | SWPC 7B (190kg/㎟) | 3/8 | 9.5 | +0.016 -0.008 | +0.4 -0.2 | 290 | 432 | 22,930 | 10,400 | 19,510 | 8,850 | 3.5 | 12-16D | |
| | | 7/16 | 11.1 | +0.016 -0.008 | +0.4 -0.2 | 389 | 580 | 31,080 | 14,100 | 26,450 | 12,000 | 3.5 | 12-16D | |
| | | 1/2 | 12.7 | +0.016 -0.008 | +0.4 -0.2 | 520 | 774 | 41,220 | 18,700 | 35,050 | 15,900 | 3.5 | 12-16D | |
| | | 0.6 | 15.2 | +0.016 -0.008 | +0.4 -0.2 | 739 | 1101 | 58,640 | 26,600 | 49,820 | 22,600 | 3.5 | 12-16D | |

B.L*:Breaking Load

# X-BON
# SUPER-BON



# X-BON
# SUPER-BON

## USE & TYPE OF PRODUCT

### Super-Bon

This has the same standard and mechanical properties as that of X-BON deformed P.C. D-grade is suitable when preventing corrosion by salt and P.C concrete products needing high-heated relaxation.

| Type of Product | Grade | Dia. | Uses | Remark |
|---|---|---|---|---|
| X-BON Deformed PC | C | 5 x 13mm | · Concrete pole & pile reinforcement<br>· Post of building & reinforcement for beam<br>· Reinforcement for fume pile | Pole<br>Building<br>Bridge<br>House |
| | D | | · Pile<br>· Pole<br>· Fume Pile<br>· Beam | |
| SUPER-BON Deformed PC | D | | · Sheet Pile<br>· High Stressed Pile | Harbor Wharf |

## The Characteristics of Product

Our company's X-BON & SUPER-BON deformed PC Steel Bar are products with excellent mechanical and processing properties as below and produced according to KS D 3505 & JIS G 3137.

| Classification | Characteristic |
|---|---|
| Mechanical Property | 1. Able to make the Reinforced Concrete lighter which permits better economy of design.<br>2. Very easy to spot weld, but little changed to the mechanical property even if processed by heading screw method.<br>3. Very economical, due to the high elastic limit point and the extremely low relaxation.<br>4. This mechanical property contributes to the quality improvement with yield ratio of 90% which is 10% higher than minimum value of fatigue. This is essential to the PC steel bar. |
| Adhesion | 1. Tensile strength is improved because surface if processed with the form of spiral defeat and the adhesion is bigger than pc wires.<br>2. Due to the excellent adhesion, the production cost is reduced, and productivity improves.<br>3. Due to the good rate of stress, removing the crack occurred in the reinforced concrete. |
| Utility | 1. It does not need a process in straight line because it is coiled within the elastic limit, with maintining a perfect straight line while releasing.<br>2. You can process with screw without the necessity of peeling procedure because the dia of product was produced for the screw process. |

# X-BON
# SUPER-BON

## Quality Properties of Product

### 1. CHEMICAL COMPOSITION

| P | S | Cu |
|---|---|---|
| Max. 0.03 | Max. 0.035 | Max. 0.30 |

KS D 3505 and JIS G 3137 state the following diagram of "P,S,Cu". As the impurities of raw-material(wire rod).
YOUNG HEUNG meets this base line and uses the best materials to adhere to all mechanical properties of P.C Steel Bar including tensile load, yield load, relaxation, spot welding.

### 2.SHAPE, DIA & TOLERANCE

| Type of Wire | Grade | Nominal Dia. (mm) | Basic Dia. (mm) | Tolerance (mm) | Nominal cross section area ($mm^2$) | Mass (kg/m) | No of groove/ Lay | Groove Shape |
|---|---|---|---|---|---|---|---|---|
| X-BON C (KS D 3505) (C Grade,No.1) | SBPD (110/125) SBPD (1080/1230) | 5.0 | 5.0 | ±0.05 | 18.07 | 0.142 | 2/Z | 2 |
| | | 7.0 | 7.0 | | 35.40 | 0.278 | 2/Z | |
| | | 8.0 | 8.0 | | 46.25 | 0.363 | 2/Z | 3 |
| | | 11.0 | 11.0 | | 87.30 | 0.685 | 4/Z | |
| | | 13.0 | 13.0 | | 122.11 | 0.958 | 4/Z | |
| X-BON D SUPER-BON D (KS D 3505) (D Grade,No.1) | SBPD (130/45) SBPD (1275/1420) | 6.1 | 6.10 | ±0.05 | 28.27 | 0.222 | 3/S | 4 |
| | | 7.4 | 7.25 | | 40.0 | 0.315 | 3/S | |
| | | 8.3 | 8.33 | | 52.5 | 0.412 | 4/S | |
| | | 9.2 | 9.25 | | 64.0 | 0.500 | 6/S | 6 |
| | | 11.0 | 11.10 | | 90.0 | 0.710 | 6/S | |
| | | 13.0 | 13.10 | | 125.0 | 0.980 | 6/S | |

※Tolerance is for basic diameter.
※It's available to supply the product of size 5~13mm by, K.S specification per customer's order.

## 3. MECHANICAL PROPERTIES

The mechanical property of X-BON & SUPER-BON complies with the spec. of KS D 3505 or JIS G 3137

| Type of Wire | Nominal Dia. | Yield Point (min.) | Yield Strength (min.) | Min.Breaking Load | Tensile Strength (min.) | Elongation (min.) | Relaxation (min.) |
|---|---|---|---|---|---|---|---|
| | mm | kg | kg/mm² | kg | kg/mm² | % | % |
| X-BON C (110/125) | 5.0 | 2,080 | 115 | 2,530 | 140 | 5.0 | 1.5 |
| | 7.0 | 4,070 | | 4,780 | 135 | | |
| | 8.0 | 5,320 | | 6,240 | | | |
| | 11.0 | 10,040 | | 11,350 | 130 | | |
| | 13.0 | 14,040 | | 15,260 | 125 | | |
| X-BON D (130/145) | 6.1 | 3,820 | 130 | 4,100 | 145 | 5.0 | 1.5 |
| | 7.4 | 5,400 | | 5,800 | | | |
| | 8.3 | 7,090 | | 7,610 | | | |
| | 9.2 | 8,460 | | 9,280 | | | |
| | 11.0 | 11,900 | | 13,050 | | | |
| | 13.0 | 16,500 | | 18,130 | | | |
| SUPER-BON D (130/145) | 6.1 | 3,900 | 130 | 4,100 | 145 | 5.0 | 1.0 |
| | 7.4 | 5,520 | | 5,800 | | | |
| | 8.3 | 7,250 | | 7,610 | | | |
| | 9.2 | 8,660 | | 9,280 | | | |
| | 11.0 | 12,200 | | 13,050 | | | |
| | 13.0 | 16,900 | | 18,130 | | | |

※ Regarding mechanical property, able to be supplied with the production by order customer requires.

※REMARKS

1) Yield point means the load against permanent elongation of 0.2%.
2) Elongation means elongation after fracture at the original gauge length which is 8 times of nominal dia.
3) Relaxation is the value acquired by testing 80% of yield strength with the initial load for 10 hours on the normal temperature.

# COLD DRAWN STEEL BARS

# GENERAL INFORMATION

Young Heun'g CD-BAR creates the perfect quality required by customers with our very modern facility using the "SCHUMAG Combined Bar Machine".
Material is of highest quality and is produced with the latest technology available.

- Highest Quality
- Most Dependable Delivery
- Best Price
- Various Products



## PRODUCTION RANGE

| FORMS OF SUPPLY | SIZE RANGE | LENGTH | MATERIAL |
|---|---|---|---|
| Rounds | 5mm ~ 30mm | 2m ~ 6m | Free Cutting Steel |
| Hexagons | 5mm ~ 25mm | 2m ~ 6m | Carbon Steel |
| Squares | 5mm ~ 20mm | 2m ~ 6m | Alloy Steel |
| Irregular Shape | - | - | Suspension Spring etc. |

## TOLERANCE GRADE

<Unit : mm>

| Dia. \ Grade | H7 | H8 | H9 | H10 | H11 | H12 |
|---|---|---|---|---|---|---|
| 5.0 - 6.0 | 0 ~ -0.012 | 0 ~ -0.018 | 0 ~ -0.030 | 0 ~ -0.048 | 0 ~ -0.075 | 0 ~ -0.12 |
| 6.10 - 10.0 | 0 ~ -0.015 | 0 ~ -0.022 | 0 ~ -0.036 | 0 ~ -0.058 | 0 ~ -0.090 | 0 ~ -0.15 |
| 10.01 - 18.0 | 0 ~ -0.018 | 0 ~ -0.027 | 0 ~ -0.043 | 0 ~ -0.070 | 0 ~ -0.11 | 0 ~ -0.18 |
| 18.01 - 30.0 | 0 ~ -0.021 | 0 ~ -0.033 | 0 ~ -0.052 | 0 ~ -0.084 | 0 ~ -0.13 | 0 ~ -0.21 |
| BAR LENGTH | 2~6m | 2 ~ 6m | 2~6m | 2~6m | 2~6m | 2~6m |
| BAR SHAPE | ○ | ○ | ○ | ○ □ | ⬡ □ | ⬡ |

# FREE CUTTING STEEL

Young Heung's Free-Cutting Steel has equal quality throughout.
It has excellent mechanical properties.
Improve the efficiency of manufacture with the excellent machine of our free cutting steels.
/Extend the life of machine tools/Available for the automotive, robotic industries.

**Application :**
- OA Instruments
- Optical Instruments
- Automotives

## FREE CUTTING STEEL

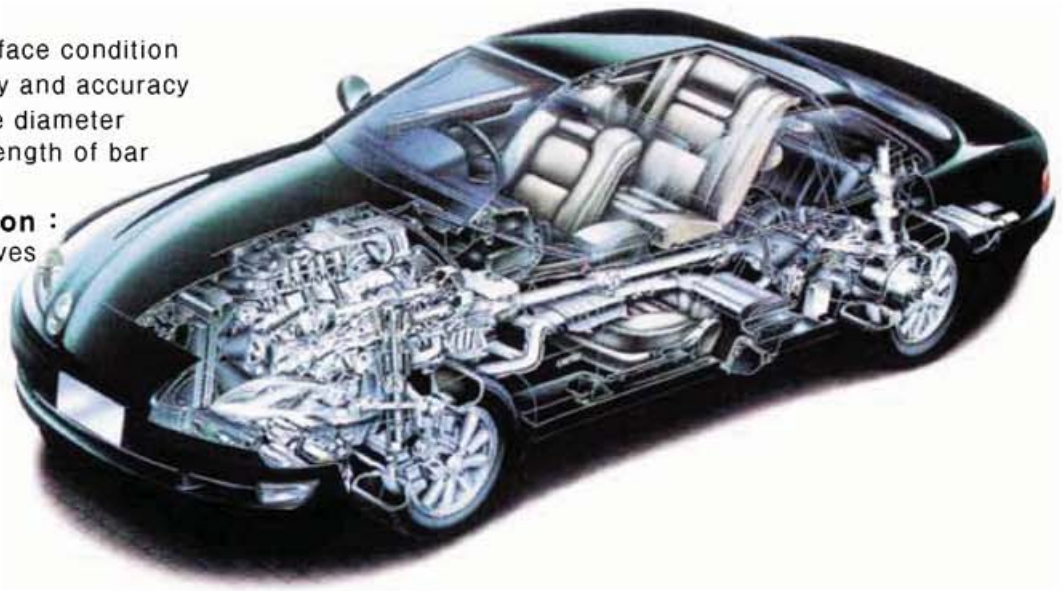
| SPECIFICATION | | | Chemical Composition(%) | | | | | |
|---|---|---|---|---|---|---|---|---|
| KS | JIS | SAE | C | Si | Mn | P | S | pb |
| SUM21 | SUM21 | 1212 | max 0.13 | 0.15~0.35 | 0.70~1.00 | 0.70~0.12 | 0.16~0.23 | |
| SUM22 | SUM22 | 1213 | max 0.13 | 0.15~0.35 | 0.70~1.00 | 0.70~0.12 | 0.24~0.33 | |
| SUM22L | SUM22L | 12L12 | max 0.13 | 0.15~0.35 | 0.70~1.00 | 0.70~0.12 | 0.24~0.33 | 0.10~0.35 |
| SUM23 | SUM23 | 1215 | max 0.09 | 0.15~0.35 | 0.75~1.05 | 0.04~0.09 | 0.26~0.35 | |
| SUM24L | SUM24L | 12L14 | max 0.15 | 0.15~0.35 | 0.85~1.15 | 0.04~0.09 | 0.26~0.35 | 0.10~0.35 |
| SUM31 | SUM31 | 1117 | 0.14~0.20 | 0.15~0.35 | 1.00~1.30 | max 0.040 | 0.08´0.13 | |
| SUM41 | SUM41 | 1137 | 0.32~0.39 | 0.15~0.35 | 1.35~0.65 | max 0.040 | 0.08~0.13 | |
| SUM43 | SUM43 | 1144 | 0.40~0.48 | 0.15~0.35 | 1.35~1.65 | max 0.040 | 0.24~0.33 | |

# MACHINE STRUCTURAL CARBON STEEL

We take great pride in
Our highest quality of Machine Structural Carbon Steels

- Good surface condition
- Uniformity and accuracy of outside diameter
- Various length of bar

**Application :**
- Automotives



## MACHINE STRUCTURAL CARBON STEEL

| SPECIFICATION | | | Chemical Composition(%) | | | | |
|---|---|---|---|---|---|---|---|
| KS | JIS | SAE | C | Si | Mn | P | S |
| SM10C | S10C | 1010 | 0.08~0.13 | 0.15~0.35 | 0.30~0.60 | max 0.030 | max 0.035 |
| SM15C | S15C | 1015 | 0.13~0.18 | 0.15~0.35 | 0.30~0.60 | max 0.030 | max 0.035 |
| SM20C | S20C | 1020 | 0.18~0.23 | 0.15~0.35 | 0.30~0.60 | max 0.030 | max 0.035 |
| SM25C | S25C | 1025 | 0.22~0.28 | 0.15~0.35 | 0.30~0.60 | max 0.030 | max 0.035 |
| SM30C | S30C | 1030 | 0.27~0.33 | 0.15~0.35 | 0.60~0.90 | max 0.030 | max 0.035 |
| SM38C | S35C | 1038 | 0.35~0.41 | 0.15~0.35 | 0.60~0.90 | max 0.030 | max 0.035 |
| SM40C | S40C | 1040 | 0.37~0.43 | 0.15~0.35 | 0.60~0.90 | max 0.030 | max 0.035 |
| SM45C | S45C | 1045 | 0.42~0.48 | 0.15~0.35 | 0.60~0.90 | max 0.030 | max 0.035 |
| SM50C | S50C | 1050 | 0.47~0.53 | 0.15~0.35 | 0.60~0.90 | max 0.030 | max 0.035 |
| SM55C | S55C | 1055 | 0.55~0.61 | 0.15~0.35 | 0.60~0.90 | max 0.030 | max 0.035 |

# SPRING STEELS & MACHINE STRUCTURAL ALLOY STEELS

We will do our best in order to develop special steel to meet customer requirements at all times.

- Suspension-Spring
- Torsion-Bar
- Stabilized-Bar
- Alloy Steel (Available by special order)
- Application:Bolt, Wrench, Tools, Spring applications.

## SPRING STEEL

| STEEL GRADE | Chemical Composition(%) | | | | | | |
|---|---|---|---|---|---|---|---|
| | C | Mn | Si | P | S | Cr | V |
| SAE 9260(SUP7) | 0.56~0.64 | 0.70~1.00 | 1.80~2.20 | max0.035 | max0.035 | - | - |
| SAE 9254(SUP12) | 0.51~0.59 | 0.60~0.80 | 1.20~1.60 | max0.035 | max0.035 | 0.60~0.80 | - |
| SRS 60(KOBE) | 0.58~0.63 | 0.35~0.60 | 1.35~1.60 | max0.035 | max0.035 | 0.40~0.70 | 0.15~0.25 |
| SAE 5155(SUP9) | 0.52~0.60 | 0.65~0.95 | 0.15~0.35 | max0.035 | max0.035 | 0.65~0.95 | - |
| SAE 5160(SUP9A) | 0.56~0.64 | 0.70~1.00 | 0.15~0.35 | max0.035 | max0.035 | 0.70~1.00 | - |

*Material : KOBE

## MACHINE STRUCTURAL ALLOY STEEL

| SPECIFICATION | | | | Chemical Composition(%) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| KS | JIS | AIS/SAE | DIN | C | Si | Mn | P | S | Cr | Mo |
| SCM1 | SCM432 | - | - | 0.27~0.37 | 0.15~0.35 | 0.30~0.60 | max0.030 | max0.030 | 1.00~1.50 | 0.15~0.30 |
| SCM2 | SCM430 | 4130 | - | 0.28~0.33 | 0.15~0.35 | 0.60~0.85 | max0.030 | max0.030 | 0.90~1.20 | 0.15~0.30 |
| SCM3 | SCM435 | 4135/4137 | 34CrMo4 | 0.33~0.38 | 0.15~0.35 | 0.60~0.85 | max0.030 | max0.030 | 0.90~1.20 | 0.15~0.30 |
| SCM4 | SCM440 | 4140/4142 | 42CrMo4 | 0.38~0.43 | 0.15~0.35 | 0.60~0.85 | max0.030 | max0.030 | 0.90~1.20 | 0.15~0.30 |
| SCM5 | SCM445 | 4145/4147 | - | 0.43~0.48 | 0.15~0.35 | 0.60~0.85 | max0.030 | max0.030 | 0.90~1.20 | 0.15~0.30 |
| SCM21 | SCM415 | - | 16CrMo4 | 0.13~0.18 | 0.15~0.35 | 0.60~0.85 | max0.030 | max0.030 | 0.90~1.20 | 0.15~0.30 |
| SCM22 | SCM420 | 4148 | 50CrMo4 | 0.18~0.23 | 0.15~0.35 | 0.60~0.85 | max0.030 | max0.030 | 0.90v1.20 | 0.15~0.30 |
| SCM23 | SCM421 | - | - | 0.17~0.23 | 0.15~0.35 | 0.70~1.00 | max0.030 | max0.030 | 0.90~1.20 | 0.15~0.30 |
| SCM24 | SCM822 | - | 22CrMo44 | 0.20~0.25 | 0.15~0.35 | 0.60~0.85 | max0.030 | max0.030 | 0.90~1.20 | 0.35~0.45 |

## Wire Gauge Table

| GAUGE NUMBER | S.W.G. mm | B.W.G mm | B.& S. mm | A.S.W.G mm | J.deP. mm | W.G. mm | B.G. mm | U.S.S mm |
|---|---|---|---|---|---|---|---|---|
| #0000000 | 12.699 | | | 12.45 | | | | 12.700 |
| #000000 | 11.785 | | 14.73 | 11.72 | | | | 11.906 |
| #00000 | 10.972 | | 13.12 | 10.93 | | | | 11.113 |
| #0000 | 10.159 | 11.532 | 11.68 | 10.00 | | | | 10.319 |
| #000 | 9.448 | 10.795 | 10.40 | 9.208 | (pp).400 | | 12.700 | 9.525 |
| #00 | 8.839 | 9.652 | 9.266 | 8.407 | (p).500 | | 11.308 | 8.731 |
| #0 | 8.229 | 8.636 | 8.255 | 7.785 | .600 | .60 | 10.069 | 7.938 |
| #1 | 7.620 | 7.620 | 7.348 | 7.188 | .700 | .68 | 8.971 | 7.144 |
| #2 | 7.010 | 7.213 | 6.543 | 6.698 | .800 | .76 | 7.993 | 6.747 |
| #3 | 6.401 | 6.579 | 5.827 | 6.190 | .900 | .80 | 7.122 | 6.350 |
| #4 | 5.893 | 6.045 | 5.189 | 5.723 | 1.000 | .88 | 6.350 | 5.953 |
| #5 | 5.385 | 5.558 | 4.620 | 5.258 | 1.100 | 1.00 | 5.652 | 5.556 |
| #6 | 4.877 | 5.156 | 4.115 | 4.877 | 1.200 | 1.12 | 5.032 | 5.159 |
| #7 | 4.470 | 4.572 | 3.665 | 4.496 | 1.300 | 1.20 | 4.481 | 4.763 |
| #8 | 4.064 | 4.191 | 3.264 | 4.115 | 1.400 | 1.30 | 3.988 | 4.366 |
| #9 | 3.658 | 3.759 | 2.906 | 3.767 | 1.500 | 1.40 | 3.551 | 3.969 |
| #10 | 3.251 | 3.404 | 2.588 | 3.429 | 1.600 | 1.56 | 3.175 | 3.572 |
| #11 | 2.946 | 3.048 | 2.304 | 3.061 | 1.800 | 1.66 | 2.827 | 3.175 |
| #12 | 2.642 | 2.769 | 2.052 | 2.680 | 2.000 | 1.84 | 2.517 | 2.778 |
| #13 | 2.337 | 2.413 | 1.826 | 2.324 | 2.200 | 2.04 | 2.240 | 2.381 |
| #14 | 2.032 | 2.108 | 1.628 | 2.032 | 2.400 | 2.20 | 1.994 | 1.984 |
| #15 | 1.829 | 1.829 | 1.450 | 1.829 | 2.700 | 2.40 | 1.775 | 1.786 |
| #16 | 1.626 | 1.651 | 1.290 | 1.588 | 3.000 | 2.60 | 1.588 | 1.588 |
| #17 | 1.422 | 1.473 | 1.151 | 1.372 | 3.400 | 2.92 | 1.412 | 1.429 |
| #18 | 1.219 | 1.245 | 1.024 | 1.207 | 3.900 | 3.40 | 1.257 | 1.270 |
| #19 | 1.061 | 1.067 | .9116 | 1.041 | 4.400 | 3.84 | 1.118 | 1.111 |
| #20 | .9144 | .8886 | .8128 | .8839 | 4.900 | 4.20 | .9956 | .9525 |
| #21 | .8128 | .8128 | .7239 | .8052 | 5.400 | 4.65 | .8865 | .8731 |
| #22 | .7112 | .7109 | .6426 | .7264 | 5.900 | 5.45 | .7938 | .7938 |
| #23 | .6096 | .6347 | .5740 | .6553 | 6.400 | 5.96 | .7066 | .7144 |
| #24 | .5588 | .5585 | .5105 | .5842 | 7.400 | 7.00 | .6289 | .6350 |
| #25 | .5080 | .5078 | .4547 | .5182 | 7.600 | 7.60 | .5589 | .5556 |
| #26 | .4572 | .4570 | .4039 | .4597 | 8.200 | 8.80 | .4981 | .4763 |
| #27 | .4166 | .4062 | .3607 | .4394 | 8.800 | 9.40 | .4432 | .4366 |
| #28 | .3759 | .3555 | .3200 | .4115 | 9.400 | 10.00 | .3369 | .3969 |
| #29 | .3454 | .3300 | .2875 | .3810 | 10.000 | | .3531 | .3572 |
| #30 | .3150 | .3046 | .2540 | .3556 | | | .3124 | .3175 |
| #31 | .2946 | .2539 | .2268 | .3353 | | | .2794 | .2778 |
| #32 | .2743 | .2286 | .2019 | .3251 | | | .2489 | .2580 |
| #33 | .2540 | .2031 | .1798 | .2997 | | | .2210 | .2381 |
| #34 | .2337 | .1777 | .1600 | .2642 | | | .1956 | .2183 |
| #35 | .2134 | .1269 | .1425 | .2413 | | | .1753 | .1984 |
| #36 | .1930 | .1016 | .1270 | .2286 | | | .1549 | .1786 |
| #37 | .1727 | | .1120 | .2159 | | | .1372 | .1687 |
| #38 | .1524 | | .1006 | .2032 | | | .1219 | .1588 |
| #39 | .1321 | | .0897 | .1905 | | | | |
| #40 | .1219 | | .0798 | .1778 | | | | |

S.W.G.....British Imperial Standard Wire Gauge
B.W.G.....Birmingham Wire Gauge.
B.& s.....Brown and Sharp Wire Gauge
A.S.W.G..American steel & Wire Gauge
J.deP...Paris Wire Gauge.
W.G....Westphalia Wire Gauge.
B.G....Standard Birmingham Sheet and Hoop
U.S.S...U.S.Standard for Sheet and Plate Iron and Steel

## SI Units and MKS Weight(Former) Unit Conversion Table(units used daily)

| Volume | SI unit | former unit |
|---|---|---|
| Strength(breaking load) | 1N | 0.101972 kgf |
| | 9.80665 N | 1kgf |
| Tension(pull strength)and flexibility coefficient | 1N/mm² [=1Mpa = 0.1hbar] | 0.101972 kgf/mm² |
| | 9.80665N/mm² | 1kgf/mm² |
| Torque | 1N · m | 0.101972kgf/m |
| | 9.80665 N · m | 1kgf · m |
| Production volume and amount used | 1kg(1t) | 1kg(1t) |
| Unit mass | 1kg/m(mass) | 1kg/m(weight) |
| Coating adherence volume | 1g/m² | 1g/m² |
| Heat value, job, energy | 1J | 0.238889cal[=0.101972x10⁺¹kgf · m] |
| | 4.18605J | 1cal |
| | 9.80665J | 1kgf · m |
| Plane angle | 1 rad | 57° 17′ 44″ 8 |
| | 0.01744 rad | 1° |

## Conversion Table

**1) Conversion of the thickness**

Circumference x0.3183=Diameter
Diameter(in)x25.4=Diameter(mm)
Diameterx3.1416=Circumference
Dimeterx0.1237=Circumference(in)
Circumference(in)x8.0851=Diameter(mm)
Diameter(mm)x0.03937=Diameter(in)

**2) Conversion of unit mass**

kg/mx0.67196=1b/ft
1b/ftx1.4882=kg/m
Unit mass of 100-meter steel wire=[wire diameter (mm)]² x 0.6126(kg)
[the weight shall be set as 7.8]

**3) Conversion of the pull strength**

kgf/mm² x 0.635=t/in²
kgf/mm² x 1422.3=1b/in²
t/in² x 1.5748=kgf/mm²
1b/in² x 0.0007031=kgf/mm² (100.0001b/in² =70.31kgf/mm²)

**4) Conversion of coating adhesion volume**

g/m² x 0.0033=oz(ounce)ft²
oz/ft² x 305.152=g/m²

## Weights and Measures Comparison Table

**1) Comparison table of length**

| Yard · Pound method | | | | Meter method | |
|---|---|---|---|---|---|
| Mile | Yard | Feet | Inch | Meter | Millimeter |
| 2.4403 | 4,294.9 | 12,885 | | 3,927.3 | |
| | 119.3 | 357.92 | | 3,927.3 | |
| | 1.988 | 5.965 | | 1.818 | 1,818 |
| | | 0.9942 | 11.931 | 0.303 | 303 |
| 1 | 1,760 | 5,280 | | 1,609.3 | |
| | 1 | 3 | 36 | 0.9144 | 914.38 |
| | | 1 | 12 | 0.30479 | 304.79 |
| | | 0.0833 | 1 | 0.0254 | 25.4 |
| | 1.0936 | 3.281 | 39.371 | 1 | 1,000 |
| | | | 0.0394 | 0.001 | 1 |

One nautical mile =1,852meters
One fathom=6.0feet=1.829meters
One mil=0.001inch=0.0254millimeters

**2) Unit mass comparison table**

| Yard · Pound method | | | | Meter method | |
|---|---|---|---|---|---|
| Ton (English) | Pound | Ounce | Ton | Kilogram | Cram |
| | 1.32277 | 21.1641 | | 0.6 | 600 |
| 0.00369 | 8.2673 | 132.277 | 0.00375 | 3.75 | 3.750 |
| | | 0.13227 | | | 3.75 |
| 1 | 2,240 | 35.840 | 1.01605 | 1,016.05 | |
| | 1 | 16 | | 0.4536 | 453.59 |
| | | 1 | | | 28.349 |
| 0.98420 | 2,204.62 | | 1 | 1,000 | |
| | 2.2046 | | 0.001 | 1 | 1,000 |
| | | 0.03527 | | 0.001 | 1 |

One ton(U.S.)(short ton)=2,000pounds=907.185kilograms